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ABSTRACT

This document contains results of a study conducted to explore what states were doing or had done in the development or utilization of occupational information. Of particular interest in this study was the identification of methods, approaches or projects which are related to the developing or utilizing of occupational information and which are innovative, exemplary, and transportable to other states under a Standardized Occupational Information System (SOIS) concept. Information contained in this report was compiled from personal interview visits to states. Results of the study are reported under the following five topics: occupational demand; occupational supply; matching occupational supply with occupational demand; occupational characteristics; and delivery of occupational information. Appended are details of the project methodology and a directory of all State Occupation Information Coordinating Committees (SOICCs). (BM)

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SUMMARY

SUMMARY

This report documents the major findings of a study of State occupational information development and utilization efforts. The study explicitly covered five aspects or components of occupational information development and utilization including:

1. Occupational demand
2. Occupational supply
3. Matching occupational supply with occupational demand
4. Occupational characteristics
5. Delivery of occupational information

The basic purpose of the study was to explore what States were doing or had done in the development or utilization of occupational information. Of particular interest to the NOICC was the identification of methods, approaches, or projects related to developing or utilizing occupational information that are innovative, new, different, and most important, exemplary with potential transportability to other States under a Standardized Occupational Information System (OIS) concept. In this context, researchers were instructed to seek information about methods, approaches or projects that either exceeded or were outside the realm of Federal data collection, survey, or reporting systems. The intent of the study, therefore, was not to report on the Federal/State programs in the area of occupational information, but to study methods or projects that either exceeded Federal standards or were unique, innovative, and potentially exemplary.

Information contained in this report was compiled from personal interview visits to States. During the course of the State visits, interviewers met with the SOICC as a whole and with representatives of each of the SOICC's signatory agencies individually. This report is not an exhaustive compilation of all efforts related to occupational information development and utilization in the States, nor is it an in-depth evaluation or judgement of the methods, approaches, or projects presented. The report is, however, a first step by NOICC in understanding the state-of-the-art in occupational development and utilization at the State level.

This report documents the findings of the study. Throughout the study, researchers formulated judgements regarding State efforts in the area of occupational information. In many instances the judgements of interviewers were significantly impacted by the responses of State personnel who reflected their individual perceptions of the value of particular efforts in their State. Of necessity, then, the judgements are qualitative assessments rather than quantitative conclusions. Since the study was conducted using a personal interview technique by persons with a wide range of programmatic knowledge, the findings are not conducive to quantification. However, the findings presented in this

Summary do reflect a consensus of opinion among the writers of this report. It should be noted that these findings do not necessarily reflect the policy of the NOICC or the views of any NOICC staff member.

The information presented in this report is potentially very useful to SOICCs in several ways. First, the document provides an overview of occupational information development and utilization across the country. Second, and more important, the report permits a SOICC to identify special methods, approaches, studies, or projects which are of potential interest and use in its State. Brief descriptions of the various methods, approaches, studies, and projects discovered during this study are present in formatted exhibits covering relevent topical areas. Should a SOICC be interested in receiving additional information about a method, approach, study, or project described in this report, the SOICC Director should contact his or her counterpart in the appropriate SOICC. Appendix B provides a list of all SOICC addresses and phone numbers. An exchange of information among the SOICCs is encouraged; this document provides a vehicle to facilitate such an exchange.

The following Summary findings serve as a succinct overview of the document. They are supported by the detail presented in the remaining Chapters. The remainder of this Summary corresponds to the five topical areas comprising Chapters 2 through 6 of this report--the principal aspects or components of occupational information development and utilization introduced above:

1. OCCUPATIONAL DEMAND

- All States possess some occupational demand data
- Occupational demand data are not always obtained from employer based surveys
- Occupational demand data are usually available at the State and SMSA level
- Many local Education Agencies and Prime Sponsors conduct one-time needs assessments which involve surveying of employers
- Geographic areas used for planning purposes vary across State agencies and do not reflect the economic realities of the labor market
- The planning cycles and time horizons of agencies in some States are not congruent
- Some universities, private firms, and other State agencies project industrial employment levels
- Certain occupational areas such as health occupations, are the focus of special occupational demand studies

- Reliable sub-State data (below the SMSA level) are not available in many States
- Estimates of demand for agricultural occupations are not available in many States
- Better information on vacancies and immediate job opportunities is desired by many States

2. OCCUPATIONAL SUPPLY

- States accepting Federal funds for Vocational Education must have an information system that provides enrollment and completion data on Vocational Education programs
- A substantial portion of the many student follow-up surveys conducted by States are one-time surveys
- A few States utilize data from private and proprietary schools as input to occupational supply
- A limited number of States utilize data from apprenticeship programs as input to occupational supply
- Occupational mobility has been studied by very few States
- Geographic mobility has been subject to limited study and is not effectively incorporated into the occupational supply system of any State
- Data on the insured unemployed exist and are being utilized in some supply models
- A general lack of reliable and comprehensive total occupational supply data is evident in most States

3. MATCHING OCCUPATIONAL SUPPLY TO OCCUPATIONAL DEMAND

- An analysis of occupational supply and demand is required for Vocational Education and CETA planning
- The supply/demand analysis is usually done by Employment Security or Vocational Education
- Use of supply/demand data in the planning processes appears to be limited
- Some States have tools for using supply/demand data in the planning process
- Crosswalks between the various coding structures are a major problem

- Many crosswalks appear to be derived from either Supplement 3 to Tomorrow's Manpower Needs, the California Cross-code Index, or the Oregon (OE-OES) Tapes
- A few States utilize clusters of codes in their supply/demand analysis

4. OCCUPATIONAL CHARACTERISTICS

- High costs are involved in localizing data on job characteristics
- Vocational Rehabilitation is a primary user of occupational characteristics data
- Many States do not appear to have a structured approach for collecting comprehensive local occupational characteristics data

5. DELIVERY OF OCCUPATIONAL INFORMATION

- Many States lack a formal approach to packaging and disseminating occupational information
- For many States the delivery of occupational information is performed on an individual agency basis
- There appears to be a lack of awareness of the sources of occupational information among certain users
- Some innovative and non-traditional approaches have been utilized to deliver occupational information

1. INTRODUCTION

Background

Since Congress passed the Smith-Hughes Act 60 years ago, the goal of vocational education has been to prepare students for work. This has implied that training be tailored to the tasks and skills required in the occupations for which training is given. The intent is that eventual job opportunities for vocational program completers be a factor in decisions regarding which vocational programs to offer. The need for accurate and timely occupational information for planning purposes has increased dramatically during the past two decades. Until recently, however, occupational information has often been compiled on a piecemeal basis. With recent Federal legislation, such as the Emergency Jobs Program Extension Act of 1976, standardization of occupational information has been encouraged on the national, State, and local levels.

The provisions of the Education Amendments of 1976, P.L. 94-482, Title II, Vocational Education, Section 161(b)(1) and (b)(2) established a National Occupational Information Coordinating Committee (NOICC) and a system of State Occupational Information Coordinating Committees (SOICCs) specifically assigned the responsibilities of developing and implementing occupational information systems at the national and State levels.

The NOICC is composed of four statutory members.

- The United States Commissioner of Education
- The Administrator of the National Center for Educational Statistics
- The Commissioner of Labor Statistics
- The Assistant Secretary for Employment and Training of the Department of Labor

An interagency agreement between the Department of Labor (DOL) and the Department of Health, Education, and Welfare (DHEW) specifies the organizational purpose and active working arrangements for the National Occupational Information Coordinating Committee. This agreement was signed by the statutory members and published in the Federal Register on February 7, 1978.

The NOICC has been established to improve coordination, cooperation, and communication in the development of an Occupational Information System (OIS). In addition, NOICC is mandated to give special attention to the problems of unemployed youths. NOICC is to assist in the development of and encourage the use of occupational information for career decision-making.

The section of the Act which establishes the NOICC also requires each State receiving assistance under the Act or under the Comprehensive Employment Training Act (CETA) to form a SOICC. The legislation specifies the individual

State agencies that are to be represented on the SOICC. The establishment of a SOICC is considered complete when there is:

- A signed State interagency agreement
- A signed State (SOICC) and Federal (NOICC) agreement
- An annual SOICC plan of activities
- A program budget request

The NOICC's legislative mandate is to develop and implement an OIS that satisfies the occupational information needs of vocational education programs and employment and training programs at the national, State, and local levels. The OIS is to be implemented by the SOICCs, with assistance from the NOICC. The minimum parameters of the OIS are defined by the Education Amendments of 1976. The OIS should include data on occupational demand and occupational supply. This data should be based upon uniform definitions, standardized estimating procedures, and standardized occupational classification systems. The OIS should also include information delivery systems tailored to the needs of planners, decisionmakers, counselors, students, and trainees.

Important steps have already been taken to comply with the requirements of the OIS. For example, the Office of Management and Budget has developed a Standard Occupational Classification (SOC) system. This system will assist in relating education and training programs to current and projected occupational needs.

Another example of progress to date is the Department of Labor's Occupational Employment Statistics (OES) program. The OES program has made significant progress in surveying current occupational employment for industries in many States and major metropolitan areas (SMSAs).

Also, the Vocational Education Data System (VEDS) is under development. When completed, this system will help to generate reliable occupational supply information. Information collected as part of VEDS will include: evaluations of local programs, numbers of vocational students by U.S. Office of Education (USOE) code, vocational programs offered, program completers, program leavers, staff, facilities, and expenditures.

Occupational information to be contained in the OIS is accumulated by many different organizations serving various needs. Individual collection efforts are often so large as to be called systems themselves. Since the NOICC will seek to avoid duplication, these systems will be integrated into and become component parts of the OIS. Accordingly, it is vital that these efforts be comparable and compatible. NOICC will encourage existing systems to make modifications appropriate to the standards of the OIS. Uniform terminology and methods of data collection are necessary, and results of data analysis should be shared to avoid duplication of work. Additionally, dissemination of information should be efficient, timely, and applicable to user needs.

Several NOICC policy determinations have been rendered concerning the OIS. These policies are:

- NOICC will not be a primary data collection agency, but shall coordinate efforts among its component signatory agencies.
- NOICC adopts the Standard Occupational Classification system of the Office of Federal Statistical Policy and Standards, U.S. Department of Commerce, as a standard overall occupational coding structure.
- NOICC adopts the Occupational Employment Statistics program of the Department of Labor as the standard principal source of current and projected occupational employment data at the local, State, and national levels.
- NOICC, in development of the occupational supply model of the OIS, will utilize the following sources for principal input data:
    - Vocational Education Data System (VEDS)
    - Higher Education General Information Survey (HEGIS)
    - State and National Apprenticeship System (SNAPS)
    - Comprehensive Employment and Training Act (CETA)
    - U.S. Employment Service (USES)
    - Unemployment Insurance Services (UIS)
- NOICC adopts the Career Information System (CIS) program of the Department of Labor as the standard concept for encouraging the development and use of occupational information for career choice and job search purposes.
- NOICC adopts the labor market area concept, as defined by the Department of Labor, as the basic geographic subdivision for development and use of occupational information.

A Study Of State Occupational Information Development And Utilization Efforts

As an initial step toward OIS development, the NOICC had to become knowledgeable of existing programs and projects in development, and to understand problems States encounter in developing or utilizing occupational information. To obtain this information, the NOICC conducted a study of the States. Of particular interest to the NOICC were State programs or system features potentially valuable in the development of a nationwide OIS or useful to other States in their OIS development efforts.

The study was accomplished through personal interviews in each State. Nineteen people from NOICC signatory agencies were selected and trained to conduct the interviews. An interview protocol was developed for use by each interviewer. Interviewers prepared summaries for each State and for each interview conducted. Appendix A provides a detailed description of the methodology employed for this study.

Although the intent of this report was to present the information in a non-judgemental manner, an underlying theme of the study was to discover potentially exemplary or innovative efforts. However, the methodology purposely did not have a specific mechanism built in to assign and substantiate the value of the information. Such an effort is in itself a project. Therefore, the writers of this report relied solely on input from the interviewers to identify efforts that could possibly be innovative. The definition of "innovative" varied among interviewers. The tone and focus of the summaries varied because of the variety of backgrounds and level of experience of the interviewers. Interviewers were naturally inclined to focus on familiar topics. For example, a person with a labor background may have been more comfortable speaking about labor-related topics.

What is listed as innovative or exemplary in the summaries also was affected by other factors. For one, interviewers worked under very definite time constraints. A two-day visit was not adequate for many States. Secondly, in States where a SOICC Director was on board, the interview process was usually smooth in comparison with those States where there was no Director. Additionally, the project was not slated for follow-up in the event key individuals were unavailable. In this circumstance, information was difficult to obtain.

Finally, the summaries were affected by the "salesmanship" of the persons interviewed in the States. Some people were able to make a routine application of an accepted methodology seem like a technological breakthrough. Others, more modest in their approach, would underplay or not even mention projects that perhaps deserved recognition. Although information in every State was reviewed by at least two people, careful analysis was beyond the scope of this project. It is possible that some efforts may be misinterpreted or explained inaccurately.

To re-emphasize, this report is only a starting point; many projects and methods that merit further study have been identified. More importantly, the report should help to stimulate and facilitate the flow of information among States; each State can better direct its own efforts if it is aware of successes and failures in the development and utilization of occupational information in other States. NOICC is interested in being continuously updated on State projects and requests that SOICCs do the same.

This report has been structured to allow information in a particular category to be readily accessed. Each chapter following this one explores a principal aspect or component of occupational information development and utilization.

Chapter 2 focuses on the occupational demand component of occupational information. The chapter looks at current and projected occupational demand and mentions projects or approaches of apparent merit. Various issues are discussed, including staffing patterns, approaches to obtaining better geographic specificity, vacancy surveys, and econometric models.

Chapter 3 looks at occupational supply and its various components. Occupational transfers, geographic mobility, the currently unemployed, and graduates of training programs are all aspects of the labor supply for occupations. State efforts to measure occupational supply and to use the information in a systematic manner are reported.

In Chapter 4, we examine how States are matching occupational supply data to occupational demand data. Several approaches have been utilized to overcome the problems associated with relating different coding structures. Included among the coding systems summarized in this chapter are USOE, OES, DOT, Census, SOC, and HEGIS.

The area of occupational characteristics data is discussed in Chapter 5. These data are vital for guidance and counseling as well as curriculum development purposes. The various sources of occupational characteristics data used by the States are analyzed and summarized in tabular formats.

Chapter 6 looks at methods States use to disseminate occupational information to the various user groups. These include career centers, on-line computer systems, pamphlets, books, and audiovisual presentations.

* * * *

This report is the first nationwide look at the development and utilization of occupational information. It should prove useful to NOICC staff, SOICCs and is an essential reference for any agency, organization, or individual interested in occupational information systems.

2. OCCUPATIONAL DEMAND

Occupational demand, simply stated, is the number of job opportunities in a specific occupation within a defined geographic area at a given point in time. The first step in determining occupational demand is to examine the economic base of an area: that is, the number of persons employed, or jobs filled in industries located in a particular geographic area.

Specific definitions of components of the concept of occupational demand suggest the scope and content of data related to this topic.

- Occupation is a general term referring to an arbitrary grouping of jobs in accordance with the work required to produce a particular good or service. For the purpose of this study, "occupation" indicates, by title, the tasks or duties constituting the total work assignment of an individual worker
- Demand is a measure of total employment plus the total vacancies which an employer is seeking to fill
- Occupational Demand, then, is an estimate of the number of job opportunities which exist or will occur within a specific occupation over a given period of time

Occupational demand may be computed for the short- or long-term. Short-term occupational demand refers to jobs currently vacant or for which workers will be actively recruited within a few weeks or months, and not more than one year. Long-term demand refers to the total number of job opportunities which will be available over a specified period of time, usually three or more years. Because of the extended period to which long-term demand refers, job opportunities encompassed by long-term occupational demand result from industry growth (i.e., expansion demand), departure of workers from the labor force (i.e., replacement demand), or technological changes which shift the occupational distribution. It should be noted that industry employment may decline as well as expand.

Wage and salary employment estimates by industry are available for every State, along with estimates of total employment. Both types of estimates are prepared under joint agreement between the Bureau of Labor Statistics and the Employment and Training Administration, through the State Employment Security offices. Methodologies and procedures for developing the wage and salary estimates are standardized. All States use the broad-based Unemployment Insurance tax reports which represent, by industrial activity, about 90 percent of all employment in most States. The annual tax report provides a benchmark which is updated monthly by a statistically selected, representative sample of firms in the State. These samples are large because data are included for all States and Standard Metropolitan Statistical Areas (SMSAs).

The total employment figures are derived from the Current Population Surveys, conducted monthly by the U.S. Bureau of the Census. With a few exceptions, these samples are not adequate for an individual State or an SMSA. However, the Bureau of Labor Statistics does make the total employment estimates available through statistical procedures.

A number of special studies in the area of employment estimation, which are conducted outside of the DOL/Census projects, were identified in the course of the interviews. These studies are described in Exhibit 2-1, following this chapter.

1. OCCUPATIONAL EMPLOYMENT STRUCTURE

The wage and salary and total employment data described above do not include occupational information. The occupational staffing patterns of industry are obtained from other sources.

(1) Sources of Data and Methodologies

The Census provides employment data by Census occupational categories within industry groups for all States and large SMSAs. Using this source in conjunction with Bureau of Labor Statistics methods and procedures, all States have produced current data on employment by occupation within industry. These data present a comprehensive picture of the occupational structure of a labor market, usually in a matrix or grid format (referred to as an Industry/Occupation (I/O) matrix).

Through computation of the ratio of each occupation's employment relative to the total employment figure in the industry, coefficients are obtained. In turn, the coefficients may be applied to new totals, thereby deriving projections of employment. The Employment and Training Administration has required each Employment Security Agency in every State to develop projections in this way and to update them every two years.

A second source of occupational information is the Occupational Employment Statistics (OES) Survey. The survey is one element of the OES program which is designed and developed by the Bureau of Labor Statistics. The remaining elements are 1) the OES National/State Industry-Occupation Matrix System (I/O Matrix) and 2) the State and area Occupational Projections Program.

Specifically, the OES Survey is designed to collect statistics on employment by detailed occupation and industry, and to obtain occupational estimates for the Nation and for the cooperating State agencies. It is a periodic mail survey conducted by State Employment Security Agencies of a sample of nonfarm establishments to obtain wage and salary employment by occupation. The survey is currently carried out in 45 States over a 3-year cycle (manufacturing industries one year; non-manufacturing, except trade, the second year; and trade industries the third year). These data are used to estimate total employment by occupation and by industry for each State and for areas within each State. Employment information is currently being collected for approximately 2,000 occupations in various surveys.

Local implementation of the survey is at various stages of development; products available through the survey vary because States have entered the program at different times. Some States have completed a full round of surveys; others have not. Only a few States have constructed a total matrix using OES data, rather than of Census figures. However, it is currently possible to develop survey-based matrices for 27 States, and such work is being done in FY 1978-79 OES activities. Projections of employment demand are still based on the Census-type matrix in most States.

Exhibit 2-2, following this chapter, lists those States that have completed the three-year schedule, constructed a matrix, and developed projections.

(2) Classification Systems

Occupational employment data are available at several levels of detail and in a variety of taxonomies. The Census-type matrix uses the Census occupational classifications. Industry information is shown for approximately 200 industry groups and over 400 occupational categories. These groups and categories are often collapsed into 10 industry and 10 occupational divisions. Few instances were found where States published the total detailed matrix; usually, data for significant or high-volume occupations are selected for presentation or analysis.

OES data are collected and compiled by a unique OES occupational classification system with industry groupings comparable to those delineated in the Standard Industrial Classification (SIC) system. A total of 1,500 possible unique occupational titles are covered in the survey-based matrix. The number used depends on the size and structure of an industry within a State.

2. OCCUPATIONAL DEMAND

Occupational employment statistics based on the Census and OES sources provide current occupational demand information to the extent of showing all jobs available and filled in a geographic area. These sources do not cover vacancies for which employers are actively recruiting.

(1) Short-term Demand

This kind of information is provided primarily in short-term demand/supply reports, needs assessments, and job openings reports. Most short-term demand data are occupation-specific; that is, the data describe job opportunities in terms of the actual job to be filled. The reports providing these data most often employ one of the usual occupational classification taxonomies, e.g., the Dictionary of Occupational Titles (DOT) classification nine-digit code.

Almost all States and the various user groups reported preparation and dissemination of short-term needs assessments. Usually these needs assessments were conducted under contract to a Local Education Agency (LEA) to obtain localized demand data. The nature of these efforts varied from one-time surveys of a small number of employers to analyses of job openings received through local Employment Service offices. Generally, the methods and procedures used do not meet statistical standards.

(2) Long-range Projections

All State Employment Security Agencies (SESAs) are required to develop and publish long-term projections (five or more years) of employment by occupation. As of now, with few exceptions, the Employment Security Agencies use the methodology provided by the Bureau of Labor Statistics and the data are Census-based. Most States have prepared a minimum of one or more publications with data available at the State level. Some States have prepared employment estimates and projections by occupation for their largest SMSAs. The data, which are expected to provide the basis for Vocational Education and Comprehensive Employment and Training Act (CETA) plans, are scheduled to be updated every other year.

Long-range projections were found in publications ranging from required "core" products prepared by a State Employment Security Agency to data files from complex econometric models used by State universities or produced through special studies. Some of the econometric models are described in Exhibit 2-3, following this chapter.

Most of the industrial projections are based on the internal administrative and tax report statistics collected and compiled by the State Employment Security Office. This data base, however, is not all-inclusive. The OES surveys specifically omit certain important industries. Therefore, programs and efforts to develop methodologies to augment and supplement the OES surveys are very important. Special projects related to the OES are summarized in Exhibit 2-4, following this chapter. An example of a program that can be used to supplement OES data is the Cooperative Health Statistics program (CHSS) which is the source of much health-related data. This is a Federal-State program of the National Center for Health Statistics involving 45 States for developing a variety of data and analyses, including health manpower data.

Several States reported special projects for long-term projections designed and implemented by groups including universities, Vocational Education agencies, and private research. Several such efforts worthy of note are mentioned in Exhibit 2-5, following this chapter.

Despite efforts to round out the data base, long-range projections are limited. For example, all estimates are subject to statistical error. Most of the projection models rely on basic economic assumptions to determine industry trends, so they are especially vulnerable. The occupational structure used in the Census matrix reflects self-assessment and is often over- or understated.

The OES occupational structure represents employer staffing patterns, but is limited to a prescribed list of approximately 200 occupations per industry. The survey is also dependent on voluntary responses.

Projection models produced by universities and other research groups tend to use the same industry employment base as the SESAs--usually ES-202 data. These data have not been corrected, in some instances, when technical or policy adjustments have occurred; all users are not aware of these changes.

(3) Occupational Information At Sub-State Levels

An often heard criticism of the SESA occupational information is the absence of sub-sector (less than SMSA) information. Most major users of occupational information indicated a need for data related to their specific geographic jurisdiction. Problems which have hampered the development of sub-sector data include lack of a data base, scarcity of resources or staff to do the work, absence of proven methodologies, cost, and sometimes, the misunderstanding or ignorance of the labor market area concept.

As a first step, development of an industry employment data base is essential to the production of sub-sector occupational data. This effort entails the disaggregation of State employment figures to employment sites. Complete addresses are rarely provided on the original input document (ES-202), so development of data for sub-areas of SMSAs is costly and time-consuming. Nevertheless, it has been done in a few instances and methodologies have been documented and are available. States that have developed or are in the process of implementing sub-sector occupational employment estimates are shown in Exhibit 2-6, following this chapter.

EXHIBIT 2-1
NON-DOL/CENSUS EMPLOYMENT ESTIMATING PROJECTS

State	Title of Project	Source/Contact	Abstract Description
Illinois	Employment Estimates and Occupation Projections by Bureau of the Budget	Illinois State Bureau of the Budget	Data collected for State, county, and 20 regions. Also, a three-volume report on occupational manpower projections for six to ten years is compiled through the joint efforts of the Governor's Office of Manpower, Vocational Education and State Bureau of Budget
Louisiana	LOTIS	Department of Vocational Education and Louisiana Tech. University	Current and one-year projected employment estimates by USOE code, developed using an economic model. LOTIS--Phases I, II and III (1974-77) used employer surveys plus government agency data. (For a more detailed description, refer to Exhibit 4-1(3).
Michigan	Quarterly Employment Estimates	Upjohn Institute	Employment by industry, labor force, and county, apparently compiled through an econometric model
New Hampshire	Annual Planning Information	Rockingham-Strafford Area	Yearly labor market information report
South Dakota	Employment Estimates	Business Research Bureau of the University of South Dakota	Estimates, including some socioeconomic factors and "feedback" from the field, are made by OE code
Utah	"UPED", "UPLAND"		Computerized model for projecting employment by occupation (Document not available)

EXHIBIT 2-2

COMPLETED OES MATRICES

State	Title Of Project	Source/Contact	Abstract Description
Oklahoma	Industry Occupational Matrix/SESA	SESA	Employment by industry and OES Occupations
Oregon	Industry Occupational Matrix/SESA	SESA	Employment by industry and OES occupations. Includes coverage of residual classifications and provides follow-up procedure for non-respondents

EXHIBIT 2-3(1)

ECONOMETRIC MODELS FOR ESTIMATING AND PROJECTING EMPLOYMENT

State	Title of Project	Source/Contact	Abstract Description
Arizona	Economic Forecasting Model	Division of Economic and Business Research, University of Arizona -Carol Taylor	Forecasting models developed for Phoenix and Tuscon SMSA. Phoenix is annual projections for 2 years out for income, employment and population. Tuscon model predicts same variables on a quarterly basis, eight quarters out.
		Division of Economic and Business Research, University of Arizona -Alberta Charney	A quarterly estimating model for the State of Arizona. Variables for prediction are revenue, income, employment and population.
California	Economic Forecasting Model	U.C.L.A.	Current employment by industry and short-term projections on quarterly basis
Florida	Fully specified econometric model of the State of Florida (STRUCT)	Henry Fishkind, Bureau of Economic Research University of Florida	A simultaneous equation system, composed of 45 stochastic equations. Contains a fully specified regional financial market: A quarterly model. Capable of conducting simulation exercies
Massachusetts	Industry Employment Projections, A MRIO Model Simulation	M.I.T.	Input-output model and simple regression analysis of employment by industry
Michigan	University of Michigan Labor Market Information System	University of Michigan	Labor force and components, estimates and projections to 1985 by quarter. Uses multiple regression and computer simulation analysis

EXHIBIT 2-3(2)
ECONOMETRIC MODELS FOR ESTIMATING AND PROJECTING EMPLOYMENT

State	Title Of Project	Source/Contact	Abstract Description
New Jersey	LION (Labor and Industry Occupational Needs System)	Department of Labor and Industry, Division of Planning and Research	Estimated employment and training needs, by industry and Census occupational group, for 1970 and 1980
Ohio	Quarterly Econometric Forecasting Model for Dayton SMSA	Mark Fabrycy, Wright State University James Newton, Central University	Projections for up to two quarters into the future. The dependent variables are categorized in five major divisions: labor market, construction, sales, export, and industrial
Pennsylvania	Pennsylvania Macroeconomic Model	Chase Econometric Associates, Inc.	Policy impact capability; revenue estimates; energy modeling and consumption and price; economic (employment and population) forecasts
Utah	Regional Energy Industry Model	University of Utah	Demographic study of economic impact of the energy sector

EXHIBIT 2-4(1)
SUPPLEMENTS TO THE
OES MODEL

State	Title of Project	Source/Contact	Abstract Description
Arizona	Education Employment	Labor Market Information Research and Analysis, Bureau of Employment and Training, Deparment of Economic Security - Vince Cullinane	Incorporates a survey of education occupations into OES survey matrix (Document in printing)
Michigan	Occupation in Hospitals	Michigan Hospital Assoc.	Count of occupations within hospitals
	Agribusiness of Natural Resources in Michigan	Agricultural and Natural Resources Institute	Manpower needs survey plus analysis of job tasks. Also includes assessment of student interest in agri-related jobs
Montana	Employment in Agriculture	Agriculture Department, Montana State University	Document not available (Survey of small farmers)
New Jersey	An Inventory of Health Professions	N.J. Department of Higher Education	Occupational profiles, work functions, employment sites, training programs available
	Survey of Licensed Practical Nurses in N.J.	Health Data Services, N.J. Department of Health	Work locations, work functions, certification specialties, and employment status of L.P.N.s
	Health Manpower Projection Methodology and Its Application to Estimating Physician Manpower Needs	Office for Health Manpower	Single equation regression model relating number of physicians, by county, to variables such as income, age, population, and hospital utilization. Projections are modified to reflect current unmet needs, national health insurance, and productivity changes (1975).

EXHIBIT 2-4(2)

State	Title Of Project	Source/Contact	Abstract/Description
Oregon	Agricultural Employment	SESA	Incorporates survey of agricultural occupations into OES survey matrix
South Dakota	Nursing and Dental Components of the Health Manpower Plan	S.D. Department of Health S.D. Health Systems Agency U.S. Public Health Service	Numbers of nursing and dental personnel employed in training, assessment of adequacy of employment levels and of educational preparation, projections of needs
Vermont	Jobs in Public Service Agencies and Private Non-profit Organizations	CETA	Staffing patterns by unit, plus unmet needs

EXHIBIT 2-5
SPECIAL PROGRAMS FOR
LONG RANGE PROJECTIONS

State	Title Of Project	Source/Contact	Abstract Description
Hawaii	Current and Projected Employment Trends	Voc. Educ., through a contract with Human Resources Planning Institute, Seattle, Washington	Annual estimates, covering five-year period
Iowa	Statewide Labor Demand Survey	Department of Public Instruction, Iowa Development Commission	Survey of sample of Iowa employers, including number of workers, current and projected job vacancies, and in-plant training output
Massachusetts	Occupational Outlook Survey, Parts I & II, 1976	Data collected by Berkshire Educ. Collaborative, Hampden Co., and University of Massachusetts at Amherst	Two-year projections classified by DOT and Census
	Industry/Employment Projections	Department of Manpower Development	Document not available
New Jersey	HOPE	Office of Labor Statistics Division of Planning and Research, funded by U.S.O.E.	Descriptions of 400 plus occupational clusters

EXHIBIT 2-6(1)
SUB-STATE LEVEL
ESTIMATES OF
OCCUPATIONAL DEMAND

State	Title Of Project	Source/Contact	Abstract Description
Alabama	Occ. Emp. Projections, for eight planning areas	Vocational Education	Census matrix data converted to USOE codes
California	Income, Action, Los Angeles Ind/Emp Survey	SESA	Industry employment by job site. Covers up to 95 percent of all wage and salary employment and is aggregated at Census tract level
Maine	Industry/Occ. estimates, (including agricultures), available by SMA, county, and LMA	SESA	1000-1200 occupations included at county level
Massachusetts	Industry employment estimates and projections for 1975-1990	Office of State Planning	Employment figures provided for the State and its 13 regional planning districts, by broad industry groups and, in manufacturing, by 2 digit SIC industries as well. The methodology begins by taking national employment projections for the U.S. economy, as produced by a prominent national econometric model. These figures are then fed into an econometric model of the State, which had been constructed earlier by the State university. The State econometric model, in turn, produced estimates and projections for the State: these figures served as control totals for sub-State analysis. The sub-State work was carried out using a regression analysis of the shifting share of the States employment in a given industry, which was located in each sub-State region. The projections for each sub-State region are mutually consistent with one another, and are designed to reconcile with the best available information on

EXHIBIT 2-6(2)

State	Title Of Project	Source/Contact	Abstract/Description
			projected employment for the State as a whole. This approach also allowed expectations of future national developments to be explicitly embodied in the projections. This is a significant methodological advance, and allows the State and regional projections to be recalculated relatively easily, when significant changes occur in the national employment picture. The shift-share analysis considered non-linear as well as linear trends: the study was based on a "total full-time equivalency employment" data base, assembled by adjusting available DES data.
Minnesota	Industry employment projections and occupational staffing data for sub-State areas	SESA	Employment and Occupational estimates for three sub-State areas. Allowed for some detail while avoiding disclosure problems
New Hampshire	Industry employment by State, SMSA, economic region, field office, and job center	SESA	Employment by industry only
New Jersey	Occ. Demand in Bergen County, 1976	Institute for Metropolitan Studies, Ramapo College of New Jersey	Projections for selected occupations. Utilized employer survey

EXHIBIT 2-6(3)

State	Title Of Project	Source/Contact	Abstract Description
North Carolina	Employment estimates available for 17 multi-county planning regions	SESA	Employment projections to 1985 for specific areas
Ohio	"LEAPS" Ind./Occ. Matrix		Disaggregated to 102 planning districts
South Carolina	Occ. Training Needs by State 10 planning districts	SESA	BLS matrix data converted to OE codes to provide annual job openings
Utah	Area-specific Matrix	SESA	Localized occupational estimates for SMSA, planning areas, county, and some districts, classified by DOT, OES, OE, Census, and SOC codes

3. OCCUPATIONAL SUPPLY

Occupational supply is defined as an estimate of the number of individuals working or seeking work in a specific occupation at a given time. This definition includes both the employed and the unemployed, thereby providing a complete indication of the actual number of workers available for any job. Since the definition of demand used in the preceding chapter includes current job opportunities, a matching definition of supply must include the workers who currently hold these positions.

Supply, like demand, is divided into several sub-elements. Current supply is an estimate of the number of workers employed plus those seeking work in a specific occupation at the time in question. This group includes:

- Employed workers
- Insured or uninsured unemployed (qualified and experienced) workers
- New entrants: workers who have recently completed a training program for an occupation but have not yet secured employment

Anticipated supply or potential supply is defined as those individuals who are expected to be seeking work in a given geographical area in a specific occupation at some future time. This group includes:

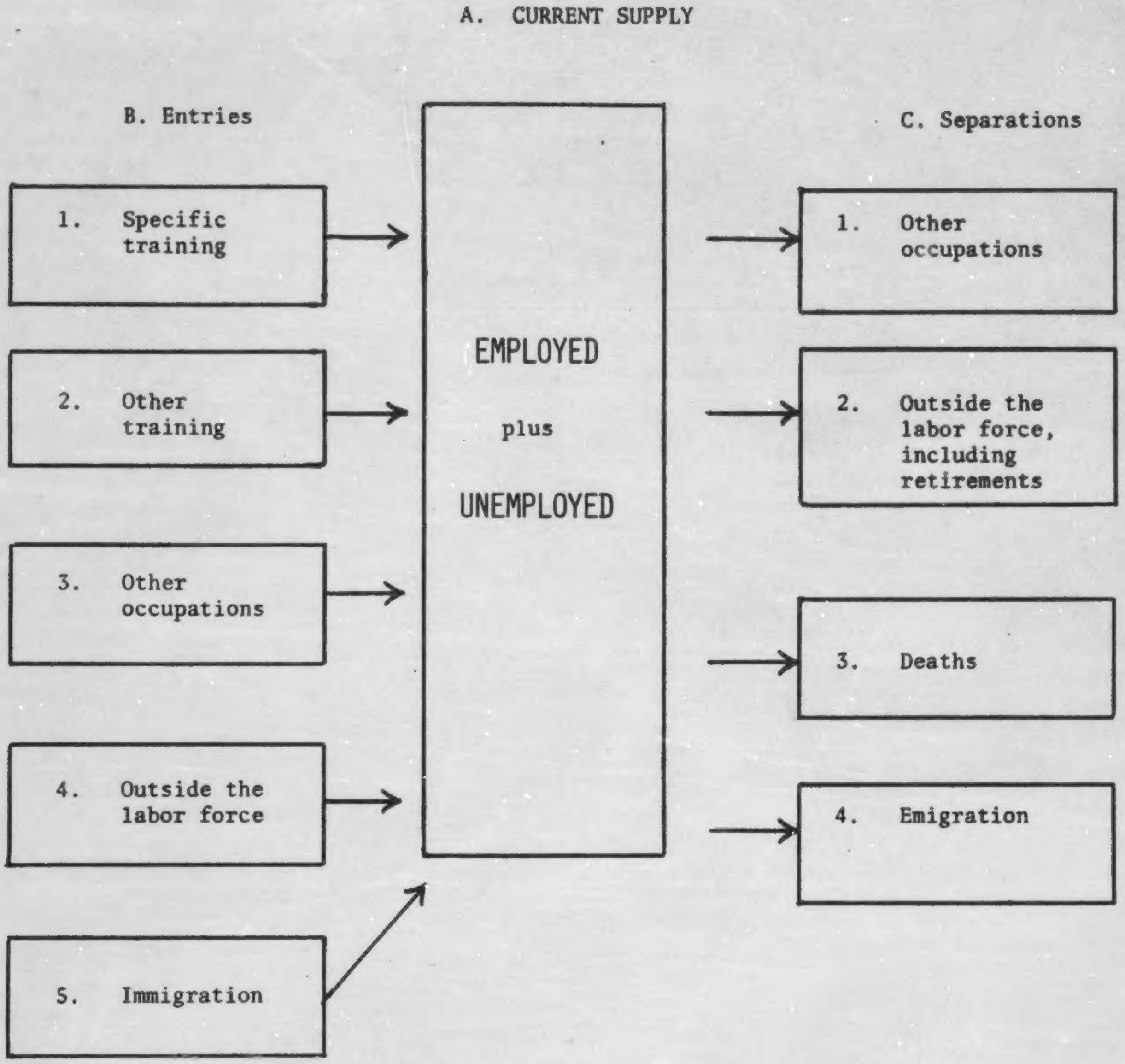
- The likely share of people involved in but not yet completed with institutional occupational preparation
- Transfers from other occupations
- Entries from outside the labor force
- In-migrants to the specific geographical area

The size of the group representing potential supply is very difficult to assess. There are a large number of socioeconomic factors which affect a person's decision to enter the world of work and select a specific occupation. These factors encompass:

- Occupational mobility
- Geographical mobility
- Job attractiveness

There is much to be learned and applied in these areas. Exhibit 3-1, following this page, illustrates the overall supply concept, as it is generally perceived.

EXHIBIT 3-1
FLOWS OF WORKERS
INTO AND OUT OF AN
OCCUPATION


A. CURRENT SUPPLY
B. Entries
1. Specific training
2. Other training
3. Other occupations
4. Outside the labor force
5. Immigration
EMPLOYED
plus
UNEMPLOYED
C. Separations
1. Other occupations
2. Outside the labor force, including retirements
3. Deaths
4. Emigration

Occupational Supply: Concepts and Sources of Data for Manpower Analysis, Bulletin 1816 US Department of Labor, Bureau of Labor Statistics, 1974. pg. 4.

1. COMPLETERS OF TRAINING PROGRAMS

Colleges, universities, public and private vocational/technical schools, high schools and other training/educational institutions contribute to supply. Data from these institutions are fragmented, dissimilar and generally not readily applicable to a specific occupation.

Occupational supply data for a specific occupation can be obtained by measuring various sub-elements and approximating others. Perhaps the one sub-element that could be most easily measured is the output from the State vocational school systems. All States are required to collect data on their enrollments in Vocational Education programs. Enrollment data can indicate the number of persons who may become part of the supply at a future date. Additionally, certain States go beyond existing Federal requirements in the collection of data by providing completion data - a more accurate analysis of supply.

It should be noted that Vocational Education graduates are only one component of the training sub-element of the supply for an occupation. Individuals trained through CETA or Vocational Rehabilitation and Apprenticeship programs are other important sources. The procedures for collection and utilization of data on completers of training programs vary from State to State. Examples are listed in Exhibit 3-2.

2. FOLLOW-UP SURVEYS AND STUDIES

Follow-up studies provide information on the workings of the labor market. A person trained for a specific occupation does not become part of the supply for that occupation unless he or she is actually working or seeking work in the occupation. Follow-up studies provide valuable information to program planners. For example, if certain training programs have a low placement record, the planner has good cause for further investigation. Studies which track completers over a period of years provide valuable information on career ladders and occupational mobility. Many States have sponsored follow-up studies. Examples of these are listed in Exhibit 3-5.

3. STUDIES, SURVEYS AND REPORTS

Numerous special studies and surveys have been conducted to provide a better understanding of the labor market and of the supply for specific occupations. Some studies have focused on specific geographical areas, selected occupational fields, or certain segments of the population. Other studies have examined general theories of labor market behavior. Examples of occupational supply-related studies, surveys, and reports are listed in Exhibit 3-4.

EXHIBIT 3-2(1)
INFORMATION SYSTEMS
RELATED TO COMPLETERS OF
TRAINING PROGRAMS

State	Title Of Project	Source/Contact	Abstract Description
Arizona	Vocational Rehabilitation Information System	Rehabilitation Services Bureau, Department of Economic Security - Kathy Casperson	The automated management information system provides information on all Bureau activities with handicapped individuals, i.e., client characteristics, client progress in programs, client costs and financial data and client occupation, training and placement data.
California	Vocational Rehabilitation Management Information System		An automated management information system (MIS) to which substantial data are entered at the time of referral, at the end of the referral process, when plans are written, and at closure
	Management Information System	San Diego Prime Sponsor	The San Diego Prime Sponsor appears to have an extensive MIS. Data input forms and reports include: . Participant Intake Record . Employability Development Plan . Notice of Training Opportunity . Referral Card . Participant Results Record . Training With Notice Of Participation . Training Without Notice Of Participation . Transition/Termination Form . Acceptance Cancellation . Error Listings
	Vocational Education Program Monitoring System		The Monitoring System defines a procedure for collecting, analyzing, and displaying vocational education program performance data. The output document, the "Program Monitoring Matrix", displays 10 critical program information factors which help to describe program performance. As of March, 1978, the Monitoring System Process Manual was being reviewed by the California Occupational Information Coordinating Committee for approval and/or modification prior to its release.

Note: All States have Vocational Education and Vocational Rehabilitation management information systems. This exhibit presents those MIS' reported in the interviews.

EXHIBIT 3-2(2)

State	Title Of Project	Source/Contact	Abstract/Description
California (continued)	Program/Course Inventory (PCI)		The PCI form was designed (1) to identify Vocational Education instructional programs in terms of the component courses as well as the occupations they serve, and (2) to provide information to California residents on the availability of Vocational Education. The data collected on the PCI form assists in program evaluation, student recruitment, guidance and counseling, and student follow-up.
	Public Education Supply Data Systems (PESDS)		The PESDS is a computerized process designed to track the flow of Vocational Education students through training programs. The PESDS was developed to: (1) provide uniform definitions for collecting, reporting, and interpreting program/course data to assist in preparing the required VE/COE 48 and 45 reports, (2) provide a basis for determining non-duplicated program enrollment and completion data for specific occupations, (3) provide an accurate supply data base which can be utilized for preparing supply/demand reports, as well as student program enrollment projections, and (4) serve as a "data generator" for the Vocational Education Program Monitoring System.
	Student Accountability Model (SAM)		This model was constructed "to provide a system of procedures for identifying and describing California community college occupational students and for obtaining information about them after they leave college. The model was designed to satisfy two needs: 1. Completion of reporting forms required for governmental agencies 2. Program evaluation and planning The model has three major components: (1) The Student Accounting Component, in which occupational students are operationally defined and classified, (2) the Student Follow-up Component, in which occupational students no longer in college are categorized and procedures for obtaining information about them are recommended, and (3) the Employer Follow-up."

EXHIBIT 3-2(3)

State	Title Of Project	Source/Contact	Abstract/Description
Colorado	Management Information System		The Colorado system is designed to meet a wide range of information needs of planners and administrators. The system utilizes an extensive data base including the following categories of information: . Student Data--Enrollments, completions, placement characteristics, and follow-up . Staff Data--Credentials, professional improvement experiences, and assignments . Program Data--Current and projected cost and staff requirements, courses, and other descriptive data elements . Equipment and Materials Data--Requests, costs, and expenditures . Manpower Demand and Supply Data--Data from various sources . Translation Table--Manpower demand data coding crosswalks, U.S. Office of Education taxonomy of Vocational Education instructional program titles and codes, county and school district names and codes, and a listing of equipment names and codes This data base can be modified and accessed by nontechnical personnel to meet widely varied needs for specific information.
Florida	Vocational Education Information System		The system contains information provided by teachers on their respective courses and students enrolled. A subsystem follows up former students and employers of former students.
Georgia	Vocational Management Information System		The Georgia system, which is not yet completely operational, includes the following components: . Vocational student information . Vocational staff information

EXHIBIT 3-2(4)

State	Title Of Project	Source/Contact	Abstract/Description
Georgia (continued)			. Vocational follow-up and placement information . Vocational equipment inventory information . Vocational facilities information . Vocational occupational needs information . Vocational financial analysis information
Iowa	Career Education Needs Information System (CENIS)		CENIS is a data collection, analysis, and reporting system designed to provide, for most technical occupations, (1) current and projected personnel needs of employers in Iowa, (2) incoming student occupational preferences, (3) expected supply of graduates, and (4) outcomes of area school graduates during the latest three-year period. The overall system has five components: . CENIS Computer Software Supervisor . Labor Demand . Student Interest . Three-year Follow-up . CENIS Interface
Maine	Vocational Education Management Information System		This system, which was under development as of February 4, 1977, provides for a data base and routine processing of school curriculum data. The data base consists of two files. The post-secondary file contains information by school at a program level; descriptive, administrative and financial data are maintained and reported for each program that a school offers. The course/unit file contains information by school and level of educational services (secondary, postsecondary, and adult) at a course level. Course characteristics, student counts, and scheduling data are maintained and reported for each course.
New Hampshire	Development of a Management and Information System for the Division of Vocational/Technical Education, New Hampshire State Department of Education	Research Coordinating Unit, Vocational--Technical Division	This report describes the methods used by the Division of Vocational-Technical Education in New Hampshire for collecting data on students, enrollments, programs, and staff under a new approach that consolidates numerous Federal and State requests. Among the contents of the report

EXHIBIT 3-2(5)

State	Title Of Project	Source/Contact	Abstract/Description
New Hampshire (continued)			is a description of the methods used to insure quality data by direct contact with local reporting agencies and data collection forms, strategies, and instructions on use of occupational data.
	Development of a Management and Information System for the Division of Vocational/Technical Education Program Assessment Model (PAM)	State Department of Education	This report includes procedures used to design a Program Assessment Model and the resulting products. The Program Assessment Model (PAM) is a data-based decisionmaking system with built-in flexibility to meet evaluation needs of individual school systems. It has 10 key components, a supporting system, 61 implementation strategies, and 4 broad categories of data to be collected.
New York	Occupational Educational Data System (OEDS)	State Education Department	This system is used annually to survey enrollment, follow-up, and staff at the secondary, postsecondary, and adult levels. The system produces data aggregated by program, and by institution.
	Occupational Education Reporting System (OERS)		A system is being designed to collect and store occupational educational enrollment data on students at the secondary and adult levels of instruction. Secondary enrollments data will be extracted from existing reporting requirements. The activity will be centralized in one of the State's Regional Computer Services Center (at NYSSCSS Network). Where LEA's do not suscribe to the NYSSCSS services, occupational education data will be reported directly. The system will serve as a vehicle for surveying program completers and leavers.
Oklahoma	Student Accounting System		The objectives of the Student Accounting System are to collect, process, and analyze enrollment, completion, drop-out, and follow-up data on one-, three-, and five-year bases. The system indicates the number of students enrolled, completed, and working in the area for which they were trained, as well as the number projected to be trained, and projects, with the Occupational Training Information System (OTIS), the number of programs needed in each occupational area. The Student Accounting System

EXHIBIT 3-2(6)

State	Title Of Project	Source/Contact	Abstract/Description
Oklahoma (continued)			enrolls a student only one time for any program. Enrollment, completion, and follow-up data are all completed at one time by the teacher. A Student Status Report form provides a computerized listing of the classes for the prior year and for which the teacher indicates a student's status as of October 1. The teacher may describe the student's status as continuing in the program, has completed the program, or has dropped out of the program before completion. A follow-up report form provides a computerized listing of those students whom the teacher indicated as having completed the training program. Students are followed up three years and five years after completion, and the teacher indicates, by code, the student's situation at that time.
	Vocational Rehabilitation Management Information System		The large-scale computer capability of the Department of Institutions, Social and Rehabilitative Services enables checking, analysis, and evaluation of almost every aspect of the Vocational Rehabilitation service delivery system. Monitoring and evaluating the rehabilitation program is accomplished, in part, through utilization of computer documents such as the referral and caseload analysis report and the case movement index. A comprehensive client data base enables managers and planners to conduct a wide variety of analyses with system support.
Oregon	Summary of Secondary Education Reporting of Vocational Education Enrollment (SERVE) Reports	Oregon Department of Education	SERVE provides a data base for program planning and school district reimbursement for vocational programs. Sufficient data are collected to generate detailed reports of student characteristics. All reports are summarized at the school, district, county, administrative district, and State levels.

EXHIBIT 3-2(7)

State	Title Of Project	Source/Contact	Abstract/Description
Pennsylvania	Vocational Education Management Information System (VEMIS)		VEMIS was developed to provide all participating institutions with information that relates their performance to eight basic occupational education objectives. The eight basic Vocational Education objectives are: (1) curriculum offerings growth, (2) curriculum enrollment growth, (3) occupational skill improvement, (4) general skill improvement, (5) holding power improvement, (6) motivation for occupation studies, (7) improvement of in-field placement, and (8) reduced cost per placement in the field. The performance of each school district, planning unit, intermediate unit, and the State as a whole is reported to all levels of education management for the purpose of encouraging management by objectives at all levels.
Utah	Vocational Information System		Enrollment forms, including all vocational courses taken currently, are filled out by the students. Information relevant to handicapped students is gathered. Teachers submit data on themselves, their courses, and their students. Teachers are responsible for conducting student follow-up surveys. A survey of graduating seniors is conducted to identify their intentions. The system incorporates various financial data for planning and evaluation purposes.
Virginia	Vocational Education Reporting System (VERS)	Vocational Education Management System Project, Division of Vocational and Technical Education, Virginia Polytechnic Institute and State University and State Department of Education	The information collected through VERS is used to calculate the amount of reimbursement of Vocational Education funds to localities, to prepare U.S.O.E. reports, and to prepare planning documents. Eight data collection instruments are used. Six are completed by teachers or students and two are completed by administrative personnel.

EXHIBIT 3-2(8)

State	Title Of Project	Source/Contact	Abstract/Description
Washington	Integrated Client System (ICS)	Division of Vocational Rehabilitation	ICS integrates case service data. It processes, summarizes, and reports client service transactions, both financial and nonfinancial. Reports are produced to: (1) meet Federal and State requirements for financial accounting and auditing, (2) facilitate case management (3) improve program evaluation. It is an on-line system with data entry and inquiry performed using CRT terminals in district offices or in the central office.
West Virginia	Comprehensive Data System for Vocational Education		The system provides for collection, analysis, and dissemination of information related to vocational enrollments in West Virginia. A student fills out a form for each program type, curriculum type, and facility in which he or she is enrolled.

EXHIBIT 3-3(1)
FOLLOW-UP STUDIES
AND SYSTEMS

State	Title Of Project	Source/Contact	Abstract Description
California	TRACE		The TRACE system is a high school student follow-up system. TRACE incorporates a stratified random sample model using the sex, ethnic background, and grade point average of the graduates. The sample is representative of the graduating class in respect to the type of program the graduate completed (academic, general, vocational), the specific programs completed within Vocational Education, and the number of years spent at the school. Prior to leaving school, seniors are informed about the follow-up study and encouraged to respond to questionnaires they may receive in the future. The district/school staff prepare a roster containing classification and other data describing each senior leaving the school. A sample of the graduates is chosen for the follow-up. A questionniare is mailed. If no response is obtained, a second questionnaire is mailed. If no response is obtained from the second mailing, the data are obtained by direct telephone interviews. The questionnaire results are coded and processed. Results are tabulated and printed by computer.
Connecticut	Health Occupations Follow-up Study	Connecticut State Department of Education	The Connecticut Health Occupations Follow-up Study was initiated in Spring, 1977 to study 1967 and 1972 graduates from Connecticut health occupations training programs. The study focuses on: additional training received, past and current employment, level of satisfaction, perceptions of the quality of health occupations training and school services, training suggestions, and general demographic information about graduates.
	Graduate Follow-up		Annually, a statewide survey of the status of graduates of Vocational Education programs in Connecticut is conducted.

EXHIBIT 3-3(2)

State	Title Of Project	Source/Contact	Abstract/Description
Florida	Vocational Follow-up	Florida Division of Vocational Education	Each February all former vocational students, in each school district, who have completed programs during the previous school year ending in June, are mailed a follow-up questionnaire. Permission to contact the employer is asked of those employed and space is provided on the questionnaire for the employer's name and address. An employer follow-up is then conducted.
	Community College Management Information System	Dr. Lee Henderson, Director, Division of Community Colleges Department of Education	CCMIS contains follow-up and placement information for all community colleges.
Kentucky	Vocational Education Placement and Follow-up System	Barren River Vocaciontal Education Region Four	The system is composed of two major components: student placement and student follow-up. During the placement process, the teacher is intimately involved with his/her student and is given assistance from the regional vocational office. The follow-up system is divided into three parts: a survey of the class of six months ago, a two-year follow-up survey, and a survey of employers.
Massachusetts	Data Collection for Follow-up Evaluations of CETA Title I Adult Program	Department of Manpower	This document includes detailed instructions for data gatherers, interviewers, and coders. A participant intake form, a follow-up questionnaire, and a series of coding appendices are also explained.
	State-Wide Follow-up Evaluation System	Jeffrey Zornitsky Research and Program Development Division, Department of Manpower Development	The evaluation system is a state-wide endeavor that includes all CETA prime sponsors. Survey work is conducted locally by prime sponsors and universities or colleges with standardized survey instruments and follow-up procedures. Program coverage currently includes all adult oriented programs and is planned to be expanded to youth and PSE programs as well. Detailed information on terminees' post-program labor market experiences is captured on a continuous basis and used to generate both local and State-wide evaluation reports.

EXHIBIT 3-3(3)

State	Title Of Project	Source/Contact	Abstract/Description
Minnesota	Vocational Follow-up System		The system provides a series of reports that summarizes information gathered from current students, terminees, and graduates of the full-time day programs of the Area Vocational Technical Institutes of Minnesota.
New York	Training and Work Experience of Former Apprentices in New York State	Department of Labor	This report on the training and work experience of completers and dropouts from registered apprenticeship programs in New York State covers the 12-year period, 1958-1969. It focuses on the extent to which those served in a registered apprenticeship program are currently employed as craftsmen, supervisors, or self-employed workers in the trades in which they served their apprenticeship or in trades related to their apprenticeship. It also covers the apprenticeship experience of the former apprentices, including their evaluations of factors associated with apprenticeship completion, decisions to work in trades related to the field of training, and level of employment and earnings in present years.
	Follow-up Questionnaire	Steuben/Allegheny Board of Cooperative Educational Services	The survey instrument, a questionnaire, is brief and easy to complete, and was distributed as a postage paid mailer.
Ohio	Longitudinal Study of Vocational Education Graduates and Utilization of Federal Income Tax Data	R.D. Balthaser, Assistant Director Division of Vocational Education, Ohio Departments Building Columbus, OH 43215	This monograph reports on the use of IRS data to determine the progress of former vocational trainees.

EXHIBIT 3-3(4)

State	Title of Project	Source/Contact	Abstract/Description
Oklahoma	Parallel Follow-up		Currently, Oklahoma teachers report the status of their graduates. Information supplied in this way is secondhand and may be old or incorrect. The purpose of this study was to determine whether the present system of follow-up is adequate, as compared with soliciting information directly from the graduates. The study reports that the current method is adequate.
-	Student and Employer Evaluation		Periodically, a survey is conducted of graduates to measure their opinions of the effectiveness of secondary vocational training in Oklahoma. Questionnaires are sent to graduates of secondary vocational programs and the opinions of employers about the quality of training are solicited.
Oregon	1976 High School Follow-up System--Summary of Findings		This report summarizes the findings of a follow-up study of Oregon's high school class of 1976. The goal of the study was to gather data about activities and perceptions of students after leaving school.
	1976 Community College Follow-up Survey--Summary of Findings		The survey population included all graduates, as well as a sample of students who left each college before receiving their degrees.
Wisconsin	Student Follow-up		A short questionnaire provided the base data for the follow-up study. The data appear useful for curriculum evaluation and planning.
	Senior Survey		The purpose of the survey is to provide information for local school systems regarding potential improvements of educational opportunities for students. The Shawano-Gresham School District uses the survey as one means to gather baseline data on a yearly basis. Data from previous years have been consolidated and analyzed to show similarities, differences, and trends. Comparisons of data from different years suggest the strengths and areas of need of the Career Education Program.

EXHIBIT 3-4(1)

STUDIES, SURVEYS, AND REPORTS CONTAINING OCCUPATIONAL SUPPLY DATA

State	Title Of Project	Source/Contact	Abstract Description
Arizona	Yuma Labor Survey Prescott Labor Survey	Office of Economic Planning and Development - Bill Vanderbosch	These surveys were undertaken to determine the extent of underutilized labor resources in the labor market area. Report I describes the procedures and summarizes the results. Report II analyzes labor resources, low-income households, and the availability of female labor. Report III documents the survey procedures and provides information so others may use the data. For Prescott, a fourth report on participation in higher education is available.
California	Employment Service Potential (ESP) NOTE: This is one example of a State with an ESP program. Currently data is available for 18 States.	Employment Development Department	ESP is a new, multidimensional measure of labor turnover derived through computer manipulation of existing data bases. ESP is both an indicator of job market activity and a measure of market potential for public Employment Service job market intermediary activities. This report discusses (1) the concepts behind ESP, (2) the methodologies to obtain labor market indicators, (3) types of analysis that can be conducted, and (4) possible applications of ESP data.
	Evaluation of the Field Office Test of Sampling ESARS Applicant Characteristics		This is a feasibility study of a sampling approach for gathering Employment Service applicant information which was implemented at eight field offices. One major benefit of applicant characteristic sampling is a substantial reduction of paperwork and ESARS-related costs.
Florida	Occupational Information and Delivery System (OIDS)		OIDS utilizes various sources of supply information. Degree output from the private and public universities and colleges are obtained from the annual Higher Education General Information System (HEGIS) report. Supply from community colleges, public and private Vocational Education programs, and net migration into Florida are measured or estimated. Migrating patterns were estimated by analyzing the Public Use Sample data tapes derived from the 1970 Census. An analysis of occupational mobility was conducted using the 1970 Census occupational classification system.
Illinois	Commuting Patterns in Illinois	Department of Labor	This report is a series of tables of data obtained from the 1970 Census Fourth County Summary Tape, which classifies workers in the 102 Illinois counties by place of work.

EXHIBIT 3-4(2)

State	Title of Project	Source/Contact	Abstract/Description
Iowa	Commuting Patterns in Iowa	Iowa Department of Job Service Research Statistics	For various reasons, the proportion of workers crossing county lines commuting to work continues to grow, despite the energy shortage. This publication displays the existing trends of those members of the working force who commute to work. For each county there are totals of the members of the employed labor force broken down by the surrounding counties involved in the commuting. The data is summarized with a flow chart graphing commuter movement on a map of Iowa and three tables which net commutation for each county, comparing commuting percentages for each county over a ten year period, and commuting patterns with States adjoining Iowa. This publication is useful in determining changes in the various labor markets and is a vital analysis in the present era of energy shortage.
Kansas	Vocational Education Training in Kansas State Correctional Institutions	CETA Special Grant, Clair Domonoske	A survey of 56 parolees focused on training programs, personal attitudes, and employment history
Massachusetts	An Analysis of the Sources of Labor Supply to High Net Demand Occupations in the Boston SMSA	Andrew Sum, Research and Program Development, Department of Manpower Development	Result of research conducted by the Economics Department of Northeastern University for the Massachusetts Division of Employment Security. The purpose of the study was to expand upon the existing stock of knowledge of the supply side of occupational labor markets within the Boston SMSA. The major objectives of the study include: 1) an empirical analysis of supply sources utilized by major employers of workers in a selected number of projected high net demand occupations in the Boston SMSA. 2) to determine the feasibility of collecting data on enrollments and completions from public and private secondary and post-secondary training institutions in the Boston SMSA.

EXHIBIT 3-4(3)

State	Title Of Project	Source/Contact	Abstract/Description
Massachusetts (continued)			3) to develop methodologies that would allow the data on completions and placements from institutional training programs to be directly matched to the data on annual numbers of projected job openings for the high net demand occupations included in the labor supply study. 4) to conduct personal interviews with a representative sample of 300 firms in the Boston SMSA that employed persons in each of the high net demand occupations included in the study. A list of chapters is available upon request.
	An Inventory of Labor Market Supply Generated by Secondary and Nonprofessional Educational Institutions within Massachusetts		The report describes in considerable detail the procedures used to measure occupational supply. The study examines supply from educational institutions, including proprietary schools. A brief review describes past work by California, New Hampshire, Oklahoma, and the Tennessee Valley Authority in measuring supply.
	Occupational Mobility of Workers in Massachusetts, An Analysis of the Factors Influencing Movement of Workers out of Low-wage Occupations, 1965-1970		The data base for the study was the 1970 Census Public Use Sample which included occupational data for workers in 1965 and 1970 (in the 5 percent sample). A worker was considered to be occupationally mobile if he/she was in a "low-wage" occupation in 1965 but not in the same or another low-wage occupation in 1970, where the annual median earnings for full-year workers in low-wage occupations is $7,800 or less. The sample included only workers with 12 or fewer years of education. Various regression analyses were conducted in an attempt to better understand the vagaries of the labor market.
Michigan	Labor Market Information	Employment Security Commission	A concept paper was published on a system which is to incorporate labor market information available for Michigan and sub-State areas into a computerized system. The system will provide users with direct access to nonconfidential labor market data, formatted to meet their particular needs.

EXHIBIT 3-4(4)

State	Title Of Project	Source/Contact	Abstract/Description
Michigan (continued)	Psychological Model of Individual Labor Force Decisions		The purposes of this study are to provide information on the potential impact of alternative manpower policies and to provide information that will enable development of new and effective manpower policies. The immediate goal of the study is to identify the determinants of critical labor force decisions. The critical labor force decisions being examined are: (1) decisions to leave, remain in, or return to school, (2) decisions to join, rejoin, or withdraw from the labor force, (3) decisions to allocate time to activities other than "regular" employment, (4) decisions to leave or join an organization, (5) decisions to retire, and (6) decisions made by persons who find themselves voluntarily or involuntarily unemployed.
Minnesota	Surveys of Displaced Homemakers	Working Opportunities for Women	Various studies have been conducted concerning displaced homemakers.
Montana	SOICC Youth Survey	SOICC	A brief questionnaire was distributed to all high schools, colleges, community colleges, and universities.
Nevada	Employer Data Base Project	Employment Security Department	The intent of the project is to develop a large-scale computer system to support and enhance the efforts of employer-relations personnel. The system will enable users to access information concerning an employer and to use the computer to provide activity scheduling and performance/results reports. The system will consist of a computerized data file of individual employer records, by local office area. Employer records will include selected data items from the UI contribution file, Job Bank, and a specially developed Employer Service Potential (ESP) file, and data elements input from the field.

EXHIBIT 3-4(5)

State	Title Of Project	Source/Contact	Abstract/Description
New York	Nassau/Suffolk Student Interest Survey		An interest survey of a sample of 10th, 11th, and 12th graders in each school district in Nassau and Suffolk Counties was conducted to obtain information for planning purposes. The survey was coordinated by the local Director of Guidance and administered by the teacher of English at each survey location.
North Dakota	To Meet the Occupational Needs of Expanding or Emerging Energy Conversion Industries Utilizing North Dakota's Coal and Water Resources	North Dakota State Board for Vocational Education and the Old West Regional Commission Special Report	This report describes the activities related to the following major objectives of the Special Project. . A survey method of investigation established to identify new and emerging manpower requirements . A task analysis procedure established to serve as a base for setting up training programs for new skills required in occupations related to coal and water resource development . A demonstration program conducted with extensive industry involvement to assure that trainees will be able to meet industry needs . A plan to share results of the Project with education, business, industry, and labor in North Dakota, and with member States of the Old West Regional Commission State Boards for Vocational Education
Ohio	Human Capital and Labor Turnover in Manufacturing Industries: The Case of an Economically Depressed Region in Southeast Ohio	Emanuel T. Acquah Leroy J. Hushak Department of Agricultural Economics and Rural Sociology,	This study examines labor productivity and quit and layoff behavior of manufacturing production workers. The major purposes of this study are to: (1) determine if human capital investment significantly influences the productivity of labor and other inputs used in manufacturing

EXHIBIT 3-4(6)

State	Title Of Project	Source/Contact	Abstract/Description
Ohio (continued)		Ohio State University and the Ohio Agricultural Research Development Centers	production processes, and (2) test the proposition that the layoff rate is negatively related to a firm's investment in specific human capital, while the quit rate is negatively related to a worker's investment in specific human capital.
	The Supply Specifications of Vocational and Technical Training in Ohio	Center for Human Research, Ohio State University for the Ohio Advisory Council for Vocational Education	This study describes and evaluates the existing information base concerning the production of vocational skills and knowledge in Ohio. Specifically, it (1) identifies the major gaps in the flow of vocational information from public and private education and training institutions, (2) evaluates the adequacy of the information flow as a component of a comprehensive labor market information system, and (3) recommends institutional actions appropriate to the development of an adequate system of human resource accounting.
Oklahoma	A Mobility Study		This study measured the geographic mobility of 1973-1974 graduates of vocational-technical programs in Oklahoma for the purpose of determining the number and percentage of secondary, postsecondary, and full-time adult graduates of vocational-technical programs that find employment or are seeking employment in the same geographic area of their training. It also determined what number and percentage of graduates leave the region to seek employment in each of the 11 sub-State planning regions. Results of the study are reported by occupational objective and sub-State planning area.
	Occupational Training Information System (OTIS)		Several primary sources of supply data used in OTIS include the Oklahoma State Department of Vocational and Technical Education, the State Accrediting Agency, the Oklahoma Employment Security Commission, the Oklahoma Council for Health Careers, the State Regents for Higher Education, the State Board for Cosmetology, Manpower Development Training, and the Student Accounting System.

EXHIBIT 3-4(7)

State	Title Of Project	Source/Contact	Abstract/Description
Utah	Report on the Economic and Demographic Projections of the Utah Process Economic and Demographic (UPED) Impact Model for Alternative Future Zero for the State of Utah and Its Multi-county Districts	Roofer Weaver, Ross Reeve, Dwight Ellingwood	The UPED Model projects the effects of each Utah Process Alternative Future on the economy and population of the State and its regions. To do so, the model forecasts the pressures for labor force migration resulting from either excess or deficient demand for labor in each region. The model not only forecasts population totals, but also forecasts population characteristics in terms of age, sex, and size of the labor force. To determine the demand for labor in each region, the model projects current numbers of jobs by employment sector. It adds to these numbers the basic jobs which would be created by each of the components of each future. Finally, the model estimates and adds the number of population-dependent jobs which would result from the population growth (or decline) caused by these futures.
	Study of Occupations in Real Estate Marketing and Insurance		This study attempts to (1) obtain an accurate account of the number of sales personnel employed (full-time and part time) and (2) project future needs for sales personnel in the insurance and real estate marketing fields.
	Utilizing Occupational Hires Data	Department of Employment Security	The study investigated the information potential of hires or payroll accession data collected from a sample of employing establishments in Utah. Study efforts were limited to currently existing hiring and employment information, where primary data sources were the Unemployment Insurance Employer's Quarterly Report of Payroll Accessio (QPA) and the Occupational Employment Statistics (OES) surveys.
West Virginia	New Industry Training Service	Department of Education, Department of Commerce, Department of Employment Security	This service provides for training individuals to meet the needs of new industries. Training programs are designed in detail around a company's requirements.

EXHIBIT 3-4(8)

State	Title Of Project	Source/Contact	Abstract/Description
Wisconsin	Senior Survey		Administrators in public and private high schools were invited to permit seniors in their schools to participate in the survey. The survey instruments were completed by the students and were designed to enhance understanding of a student's career decisionmaking process.
	Estimating Characteristics of the Unemployed in Local Labor Markets--A New Method		The recommended approach calls for combining information from several existing data sources. Records of applicants seeking work and of claimants seeking Unemployment Insurance are combined and weighted, using total unemployment estimates.

4. MATCHING OCCUPATIONAL SUPPLY TO OCCUPATIONAL DEMAND

The topics of occupational demand and occupational supply have been discussed in the preceding two chapters. This chapter draws together Chapters 2 and 3 by discussing the relationship of occupational demand data to occupational supply data. Analysis of occupational supply and demand is critical to training program planners and counselors. There are several dimensions to our discussion of this interface, including:

- Underlying concepts of supply/demand analysis
- Cross-coding issues in supply/demand analysis
- Users and uses of supply/demand analysis

Each dimension is discussed in the following sections. More importantly, exhibits following this chapter show specific State activities in supply/demand analysis and application of resulting information.

1. UNDERLYING CONCEPTS OF SUPPLY/DEMAND ANALYSIS

Relating supply and demand is so fundamental to economic analysis that the concepts involved can seem trivial. Basically, supply/demand analysis consists of relating the amount of a commodity in existence (supply) to the requests or desires for that commodity (demand). Generally, price is a critical element affecting supply and demand.

When the commodity in question is workers, the concepts of supply and demand become complex. Occupational demand can be thought of as an estimate of the number of job opportunities that do exist or will exist within a specific occupation, during a given time interval, in a geographic area. Occupational supply can be conceptualized as an estimate of the number of individuals working or seeking work in a specific occupation during a given time interval. Supply encompasses both the employed and the unemployed. The essential difference between occupational demand and occupational supply data is that demand statistics describe positions or opportunities while supply statistics count people.

As previously indicated, measuring the demand for, or supply of, workers is not an exact process, but rather a series of interrelated procedures that require surveys, projections, and estimations. Measuring current demand, for example, is accomplished by labor force based surveys or employer-based surveys conducted by the Bureau of the Census and the State Employment Security Agency, respectively. Current demand is measured by the primary occupations in which workers are employed.

There are several occupational coding or classification systems that are used to summarize current and projected occupational demand data. Brief summaries of each of these classification structures follow:

- Census Code--This coding structure was used to classify data collected as part of 1970 Census into 441 occupational categories. This system does not include occupational definitions, but is merely a system for categorizing occupational titles reported on the Census form. The lack of definition is the primary reason for the difficulty in relating training data to Census occupations. Also, the Census structure provided for cross-tabulating that data for 227 industrial categories. The 441 occupational categories each have an associated job title as described in the 1971 Classified Index of Industries and Occupations.

- Dictionary of Occupational Titles (DOT) Code--This classification structure was developed through the application of uniform job analysis techniques at eight occupational research centers established around the country. Jobs are organized into "occupations" according to their similarities. Additionally, the structure and content of the job are defined. Each code in the DOT is nine digits with the first six digits representing the kind and level of work performed. The last digits assist in differentiating similar occupations. Occupational definitions are provided in their structure. There are approximately 20,000 DOT titles in the new Fourth Edition of the DOT.

- Occupational Employment Statistics (OES) Code--This coding structure is used for the OES program, the components of which are the survey, matrix, and projections. The OES classifications are developed using the DOT (primarily), Census and other sources. The level of detail on the survey is the result of many data user's need for greater detail than that provided by the Census and lesser detail than that of the DOT structure. There are now two sets of OES codes: one for the survey itself and another for the industry/occupation (I/O) matrix developed from the survey data. The OES survey matrix codes are somewhat less detailed than the survey codes, but apply to cross-industry data. The OES coding structure contains approximately 1700 unique classifications and includes occupational definitions.

- Standard Occupational Classification (SOC) Code--This coding structure, recently developed by the Office of Management and Budget, combines the detail of the DOT, excluding occupational definition, and the manageability of the Census coding schemes. The SOC provides a coding system and nomenclature for identifying and classifying occupations within a framework suitable for use in and out of government. The SOC is structured on four levels: division, major group, minor group, and unit group. Each level represents groupings in successively finer detail, thus enabling users to tabulate or analyze data for different levels of aggregation.

Inherently, measurement of supply is more difficult than measurement of demand because an operational definition of the supply of workers is elusive. Minimally, the supply of workers for a given occupation must include:

- Employed workers in the specific occupation

- Unemployed workers, either insured or uninsured, who have skills appropriate for the specific occupation

- Potential workers who are either enrolled in or have recently completed an institutional training program for the specific occupation, but have not yet secured employment

Given the framework of supply, collecting reliable data that reflect accurately the total supply of workers is difficult. The reasons for the difficulties are many and varied.

- Supply data on workers employed in specific occupations or covered by Unemployment Insurance can be codified in any one of the four occupational coding structures described above.

- Supply data on persons enrolled in institutional training programs are codified in one of two basic ways:

    - Approach 1--In accordance with a specific occupational code from one of the four occupational classification systems (Census, DOT, OES, SOC). This approach is often used for manpower training programs such as CETA or WIN and apprenticeship programs.

    - Approach 2--In accordance with the instructional discipline of the institutional training program. There are two widely used taxonomies for describing instructional disciplines, namely:

        - U.S. Office of Education (USOE) Code--This taxonomy is used to describe courses and programs in elementary, secondary, and adult schools as well as community colleges. The code was established in 1970 and documented in a book called the Standard Terminology for Curriculum and Instruction in Local and State School Systems, referred to as Handbook VI. The code contains 22 principal subject matter areas, seven of which are concerned with vocational-technical education. The USOE code is undergoing revision in an attempt to establish a better connection between this code and the SOC code.

        - Higher Education General Information Survey (HEGIS) Code--This survey produces information on the number of students enrolled in and degrees awarded by institutions of higher education. Data are tabulated by program field, where each field is associated with a HEGIS code.

- Some of the institutional training sources of supply, such as private and proprietary schools, do not normally provide data to State organizations. However data from proprietary schools are available, by Office of Education program code and by institution, in unpublished form from the National Center for Education Statistics. At present few people are aware of this data source and therefore it was not reported in the State interviews. Consequently, supply data collected from private and proprietary schools are usually not considered in an over-all supply model for a State or local area.

In short, development of reliable supply information is a far more complicated process than the corresponding process for demand. Nevertheless both components are critical for a supply/demand analysis.

Considering the multitude of coding structures for occupations and instructional disciplines, we may ask what is meant by supply/demand analysis? To answer this question, we must look beyond schemes for classifying data to the basic purpose of providing supply/demand information--to support decisionmaking in different settings. Supply/demand information facilitates decisions regarding:

- Manpower policy and planning
- Educational policy
- Vocational guidance and counseling

To fulfill the decisionmaking purposes of supply/demand information, a new aspect of demand, referred to as "unmet demand", must be considered. Unmet demand is that portion of the total demand for an occupation that cannot be satisfied with the current supply of workers in the occupation in the given geographical area. Unmet demand for future years may arise as a result of expansion and replacement requirements within an occupation.

Supply/demand analysis must focus on how well the potential supply of workers for an occupation does, or will, satisfy the unmet demand. The potential supply of workers for a specific occupation in an area, in a given timeframe comes from several sources, including:

- Manpower/educational training programs
- Other occupations
- Outside of the labor force
- In-migration to the geographical area

There are measurement problems in determining the exact magnitude of the potential supply of workers for a given occupation. For example, there is a lack of cooperation among various institutions in reporting. Also, different codification structures complicate efforts. Nevertheless, several States have resolved some of these problems and have developed supply/demand analyses that are presented through either publications or computer terminals. A summary of these States' efforts is presented in Exhibit 4-1, following this chapter. It is important to note that States producing supply/demand publicatons for Vocational Education planners are omitted from Exhibit 4-1. This is because such publications are required as part of the Labor Market Information core products program. Also, States producing supply/demand tables from the Vocational Education Annual Plan or Five-year Plan are not referenced because preparation of the tables is a Federal requirement. In general, Exhibit 4-1 cites work other than that required by the Federal Government.

2. MATCHING OCCUPATIONAL SUPPLY AND DEMAND

The major concern in analyzing occupational supply and demand data in regard to an OIS is to match supply data pertaining to potential new labor market entrants with the occupational categories for which demand data exists. This requires relating two or more of the classification structures (occupational coding systems and instructional discipline taxonomies) discussed earlier in this chapter. Establishing this relationship can be accomplished in two basic ways.

- Establishing direct code cross-walks
- Analyzing occupational and instructional clusters, and identifying interrelationships based on common skills requirements

Throughout the study, we found that States use both methods of interrelating classification structures. Exhibit 4-2, following this chapter, contains the abstracts of projects using direct code cross-walks, while Exhibit 4-3, following Exhibit 4-2, summarizes projects where occupational clustering has been utilized.

(1) Direct Code Cross-walks

The basic premise of Direct Code Cross-walks is that specific interrelationships among codes in different classification structures can be identified. Direct code cross-walks define, as the term implies, one-to-one relationships between elements in one coding structure and codes in a second structure. Such cross-walks make data collected from different sources compatible. Demand data are usually provided in accordance with one of the major occupational classification structures (Census, DOT, OES, or SOC). Supply data are often expressed in terms of USOE codes, particularly supply data from vocational and technical education programs. Therefore, a direct linkage between coding structures is needed to conduct supply/demand analyses. Two publications, developed by BLS and OE, respectively, represent the earliest attempts to relate demand coding structures in terms of occupational classifications to supply coding structures in terms of instructional discipline classifications. These publications are:

- Matching Occupational Classifications to Vocational Education Program Codes, Tomorrow's Manpower Needs Supplement 3 (revised), U.S. Department of Labor, Bureau of Labor Statistics - This is a cross-code relating Census - USOE - DOT.
- Vocational Education and Occupations, U.S. Office of Education, #OE-80061, July 1969 - This cross-code relates the DOT code with the USOE code.

Subsequently several other direct code cross-walks have been developed, many of them at the State level. Examples of cross-walks that have been established include:

- Census-DOT-USOE
- OES-USOE
- Census-USOE
- OES-DOT
- DOT-USOE
- Census-OES-DOT

The latest and most comprehensive cross-code is Vocational Preparation and Occupations linking Census-DOT-OES-SOC-USOE. The cross-code index was designed to report occupational information and facilitate occupational demand and supply comparisons.

(2) Occupational Clustering

Occupational clustering relies on grouping occupations that require similar skills or work activities. Similarly, educational clusters are based on skills taught as part of a program curriculum. In turn, these homogeneous groups of occupations and educational programs are matched.

As with the establishment of cross-walks, clustering techniques rely on existing coding or classification structures. However, rather than directly associating codes for the different structures, clustering builds logical groupings within each structure and then matches one structure to the other. For the purpose of supply/demand analysis, States use the clustering approach to match occupational supply data to occupational demand data.

3. USERS AND USES OF SUPPLY/DEMAND ANALYSIS

Specific applications of supply/demand analysis data to the concept of an Occupational Information System are:

- Input to the decisionmaking process of State and local Vocational Education administrators and planners, whereby they determine which vocational programs will maximize both student placement and individual student satisfaction
- Input to the decisionmaking process of CETA administrators and planners whereby they determine the most suitable occupations for training target populations to maximize subsequent client placements (positive terminations)
- Input to the vocational and career counseling mechanisms, to provide current and future workers with an adequate outlook on the labor market for specific occupations

States make use of supply/demand analysis data in all of these ways. In some States, the data use is little more than perfunctory; however, in others, supply/demand data are used in unique and innovative ways. These approaches to data use are discussed in the following sections and corresponding exhibits.

(1) Supply/Demand Analysis In Support of Vocational Education Planning

Vocational planners depend on the results of supply/demand analysis as one component in the decisionmaking process for determining vocational program offerings. Other important components in that process are staff requirements and availability, facilities, and access to appropriate equipment and materials. When vocational program offerings must be limited because of limitations in available funds, selections must be based on existing resources and future labor market conditions. For example, certain high net demand occupations may be inappropriate targets for training programs because of low wages or other undesirable occupational characteristics that result in high turnover.

To the extent that high net demand occupations are selected as areas where vocational program offerings are appropriate, then the curriculum content of those vocational programs can be determined by studying various information associated with an occupation. Such information includes:

- Required training and/or educational development time
- Required physical traits
- Existing environmental factors

The importance of supply/demand analysis in Vocational Education planning should be neither exaggerated nor overlooked. Supply/demand data compose one element for consideration in the planning process. Examples of unique approaches to using supply/demand data in Vocational Education planning are included in Exhibit 4-4, following this chapter.

(2) Supply/Demand Analysis In Support Of CETA Planning

The absence of long-range funding limits the planning perspective of CETA administrators and planners. CETA planning focuses on occupational areas where placement potential is highest immediately. Although short-term occupational demand data are not available in many States, some States have attempted to provide CETA planners and administrators with relevant data for selecting occupational training areas.

(3) Supply/Demand Analysis In Support Of Vocational And Career Counseling

In most States supply/demand analysis results are not used in any quantitative fashion in career counseling, but are applied on a subjective basis. Perhaps the best examples of use of supply/demand statements in career-based information are the Career Information Systems (CIS) that have been developed with grants from DOL. These systems exist in nine States:

- Alabama
- Colorado
- Massachusetts
- Michigan
- Minnesota
- Ohio
- Oregon
- Washington
- Wisconsin

Within most of these systems, each occupation is represented by a statement describing the supply/demand condition within the occupation. In some of the CIS', the supply/demand statements exist for the State as a whole as well as certain labor market areas within the State. The representative supply/demand statements range from "extreme shortage" to "extreme surplus" or may be stated simply as "demand exceeds supply," "demand equals supply," or "supply exceeds demand."

An argument can be developed for utilizing quantitative analysis in a CIS. One justification is that, in the first place, imperfect as it may be, a quantitative statement gives the job seeker, training agency, or counselor an idea of the extent of job availability. For example, 3000 more or fewer jobs or 100 more or fewer jobs in an occupation is a quantitative difference that should not be ignored. In the second place, quantitative-type statements enable one to compare opportunities in different occupations in terms of employment outlook.

Each CIS has been developed under a Federal grant so, consistent with the general approach of this study to include only activities other than those required by the Federal Government, specific abstracts of these projects are not included in the report. Information on CIS is available in the publication entitled Occupational Information Systems Grants Program: State Project Summaries, printed in May 1977 by the U.S. Department of Labor, Employment and Training Administration.

EXHIBIT 4-1(1)
SUPPLY/DEMAND
ANALYSIS PROJECTS

State	Title Of Project	Source/Contact	Abstract Description
Alabama	Labor Market Area--Occupational Information	State Department of Education, Division of Vocational Education	This report provides data helpful to local education officials for analyzing the local market. A series of computer-generated maps graphically present key demographics. A match-up of supply and demand is provided for occupations. Demand data have been obtained from: . Occupational Trends for Alabama's Manpower Planning and Local Prime Sponsors for 1985 . Alabama's Standard Metropolitan Statistical Area's Occupational Trends for 1985 Supply data include vocational programs in local boards of education, technical colleges, occupational programs in community and junior colleges, Alabama Industrial Development Training Institute, Comprehensive Employment and Training Act, and the Health Occupational Technical Institute. The report also contains data on student follow-up, categorized according to United States Office of Education codes.
California	California Occupational Information System (COIS)	John Van Zant, Project Director	COIS is an evolving occupational information system consisting of five different basic types of data: . Occupational supply/demand data . Instructional resources data . Occupational data . Socioeconomic data . Other data

EXHBIT 4-1(2)

State	Title Of Project	Source/Contact	Abstract/Description
California (continued)			The data base created by these five types of data serves two main purposes: . Planning and management of programs . Occupational guidance and counseling
District of Columbia	Publication: "Occupations, Education and Employment? (Two studies of the Washington, D.C. Labor Market Area) December, 1976	Division of Manpower Reports and Analysis District of Columbia Department of Manpower, Suite 1000 605 G Street, N.W. Washington, DC 20001	This publication contains two independent studies dealing with certain aspects of labor market information in the Washington, D.C. metropolitan area: . Education and Employment in the Washington Metropolitan Area: Some Evidence for Career Program Planning--by Paul Larkin. This study attempts to relate published estimates of occupational demand to one component of supply: educational program completions. . Women in Occupations: The District of Columbia and the Washington Metropolitan Area, 1974--by Roberta M. Spalter Roth. This study analyzes the occupational distribution of women in the Washington, D.C. metropolitan area.
Florida	Occupational Information Delivery System (OIDS)	James R. Tarr, Project Director Timothy A. Campbell, Research Associate	The purpose of OIDS is to measure accurately current and projected occupational employment demand and the net supply of individuals available to Florida's labor force. Several organizations have participated in the development of the system including: . Division of Community Colleges . Division of Elementary and Secondary Education . Division of Universities . Division of Vocation, Technical and Adult Education . Division of Employment Security . Office of Manpower Planning The system has been designed to provide: . Current and projected employment opportunities due to growth and expansion in Florida, by occupation

EXHIBIT 4-1(3)

State	Title Of Project	Source/Contact	Abstract/Description
Florida (continued)			. Current supply of manpower from various educational programs, both public and private, and output from training programs in government and industry . Methods of merging supply and demand data in ways that are useful for educational and manpower planning . Methods for disseminating occupational information to educational and manpower planners, as well as to the ultimate consumers of education--students
Indiana	Publication: Indiana Labor Supply and Demand	Indiana State Advisory Council on Vocational Education Haror J. Battle, Ph.D., Chairperson	The purpose of this document is to provide current occupational information for decisionmakers. This document is updated annually and provides data for each of the 14 planning and development regions in the State. The report focuses on occupational information for entry-level jobs.
Louisiana	Louisiana Occupational Training Information System (LOTIS)		LOTIS is primarily a planning information system designed to determine the present and probable future occupational demands, as well as the probable supply of labor which will be available during each planning period. Development of the system was completed by a consortium of the Divisions of Business and Economic Research and three universities. The system has been used relatively infrequently in the recent past, but the formulation of the SOICC may revive it.
Massachusetts	Preliminary Demand/Supply Table for the State of Massachusetts--1976	Department of Manpower Development--Research and Program Development Unit	These tables were intended for use as an information source only, in recognition of the methodological problems in constructing the tables. They represent a preliminary match of enrollments and completions in public and private secondary and postsecondary Vocational Education programs with projected job openings, by occupation. They should not be used for planning purposes until the methodological revisions described in the paper by Christine LeCam and Andrew Sum, can be made.

EXHIBIT 4-1(4)

State	Title Of Project	Source/Contact	Abstract/Description
Michigan	Michigan Employment Planning Information System (MEPIS)		This system will consist of three subsystems that will provide data necessary to compile a comprehensive social and economic data base. The three subsystems are: . General Social and Economic Subsystem . Employment Research Subsystem . Economic Policy Subsystem The current status of this system is unknown.
	Publication: Perspectives on the Development of Comprehensive Labor Market Information System for Michigan	The W.E. Upjohn Institute For Employment Research Rodger S. Lawson	This publication addresses the needs of a total labor market information system in Michigan. The publication was released in April, 1973 and the subsequent status of the project is not known.
Mississippi	Occupational Demand/ Supply Data for Appalachian Region of Mississippi	Mississippi Appalachian Manpower Consortium (MAMC)	This report was developed in response to a need for regionalized information about job opportunities and training programs available to the people of Mississippi. The report presents the current data on manpower demand and supply for occupations and training programs that exist within the Appalachian Region of Mississippi.
New Jersey	Supply and Demand for Technicians and Technologists in New Jersey	Department of Higher Education	Supply data were obtained from two sources: (1) a survey carried out by the Advisory Council on Technology and (2) HEGIS. Demand data were obtained primarily from New Jersey's Manpower Challenge of the Eighties, published by the New Jersey Department of Labor and Industry.
	A Report on Teacher Supply and Demand in New Jersey	Department of Higher Education	This report updates material presented in a New Jersey Department of Higher Education study that compared trends from 1968 to 1973 in the teacher education output of New Jersey colleges with the total number hired from this pool. In addition, projections of Fall, 1974 staffing needs in New Jersey public schools are compared with actual employment levels reached.

EXHIBIT 4-1(5)

State	Title Of Project	Source/Contact	Abstract/Description
Ohio	Manpower Forecasting in the United States	Ohio State University, Center for Human Resource Research	Reviews 276 recent forecasts. Presents comprehensive planning model, which incorporates policy, social, and environmental variables.
Oklahoma	Occupational Training Information System (OTIS)	J.B. Morton, SOICC Director	OTIS outputs an annual publication of gross demand, gross supply, and net demand for 238 occupations for the State and 11 sub-State planning regions. Beginning with OTIS Cycle Ten (FY 78), the 11 sub-State planning regions will be reapportioned into only 8 regions. The major uses of the OTIS publication are for program planning and counseling. The main objective of OTIS is to develop and maintain a systematic, continuous, and detailed system to provide manpower data by occupation to the administration of the State Department of Vocational and Technical Education.
South Carolina	South Carolina Occupational Information System--Statewide 1976	Sponsored by State Board for Technical and Comprehensive Education Funded by Coastal Plains Regional Commission and Economic Development Administration	The purpose of this project was to provide educators and administrators of training programs with projections of manpower supply and demand for various fields of training. The Occupational Information System (OIS) consists of three components: . Supply . Demand . Interfacing supply with demand The interfacing is accomplished by matching logically grouped supply clusters with logically grouped demand clusters. In the South Carolina system, the interface process involves matching clustered matrix job titles to clustered USOE codes. The object of the matching process is to derive a net demand for each occupational cluster. The methodology involved is recognized as imperfect, but useful when used with other data such as economic trends, projected population trends, and projected enrollment trends.

EXHIBIT 4-1(6)

State	Title Of Project	Source/Contact	Abstract/Description
Texas	Publication: Postsecondary Educational Supply and Occupational Demand in Texas for the Period of 1977-1983	State 1202 Commission	This report is part of an ongoing effort by the State 1202 Commission to provide information on the relation between the output of postsecondary education in Texas and career opportunities in the job market. The report specifically identifies those vocational and academic programs which are overproducing, underproducing, or in balance relative to occupational openings. Descriptive terms, used to relate job opportunities in specific occupations to programs, are based on a formula expressing the difference between demand (D) and supply (S) as a percentage of supply: $\frac{D-S}{S}$
Washington	Publications: Job Opportunities Forecast-- . Summary of Findings . Technical Reports	Human Resources Planning Institute, Inc. under contract to Washington State Commission for Vocational Education	This publication contains projections of Statewide employment demand for occupations related to educational programs. These projections are based on the Occupational Education Forecasting System which has been undergoing continual development since 1973. The most recent version of the publication contains forecasts for a wide range of educational programs. The second volume of the report contains the technical background explaining how the projections were developed.

EXHIBIT 4-2(1)

CROSS-CODING OF OCCUPATIONAL/INSTRUCTIONAL CLASSIFICATION STRUCTURES

State	Title Of Project	Source/Contact	Abstract Description
California	Cross-code Index		This four-volume index relates the three major coding structures Census, USOE, and DOT. The first volume in the series provides the rationale behind the interrelationships of the various coding schemes, and Volumes II through IV contain the actual cross-codes. Each volume is organized differently for reference purposes. There is also a training volume available.
Massachusetts	A Descriptive Analysis of the Methodology Used to Estimate Institutional Supply by Occupation Originating From Vocational Education	Pamela Frugoli Christine LeCam Research and Program Development Department of Manpower Development	This paper describes a methodology which addresses the problem of multiple cross-walks between Vocational Education programs and occupational classification systems. The methodology designed allocates vocational program graduates among related Census occupational titles. This allows for preliminary comparisons of the incremental supply originating from Vocational Education with information on the projected annual job openings by occupation.
	Paper: A Description of the Methodologies and Data Sources Used in Constructing the Preliminary Occupational Demand Supply Table for the State of Massachusetts	Christine LeCam Andrew Sum	This paper discusses several issues related to the preparation of a demand/supply table. Among these issues are operational definitions of supply and demand, sources of data, and constraints in cross-walking supply data with demand data. The paper discusses some of the substantive issues of relating the USOE codes to the Census codes and, ultimately, the DOT codes.
Oregon	Career Program Planning System (CPPS)	State Department of Education, Monty Multanen	The Career Program Planning System provides data in support of decisions about implementation of new and extension or curtailment of existing career education programs at the high school and post-high school levels. Additional benefits of the system include the identification of priority occupational areas for task analysis and curriculum development activities as well as the provision of data for student career counseling activities.

EXHIBIT 4-2(2)

State	Title of Project	Source/Contact	Abstract Description
Oregon (continued)			Inherent in the system are cross-coding capabilities to relate manpower demand data (OES) to manpower supply data (OE or Oregon Cluster Code). Also, the system incorporates data collected as part of HEGIS and adapts the HEGIS codes to a USOE structure for use in the system.

EXHIBIT 4-3
OCCUPATIONAL CLUSTERING

State	Title Of Project	Source/Contact	Abstract Description
Florida	Occupational Clustering	Tim Campbell	This paper discusses the concept of clustering certain OE codes together to facilitate relating outputs of educational/training programs to occupations or a cluster of occupations. This concept of occupational clustering achieves a cross-walk between two classification schemes, the USOE codes and the Census codes. Clustering applies to both the instruction disciplines and occupational coding schemes such as OES. In Florida, the occupational clusters from OE codes are matched to clusters created from Census job titles.
North Carolina	The Occupational Analysis Inventory: A Quantitative Occupational Description and Classification Procedure	J. W. Cunningham North Carolina State University	This paper discusses an occupational classification structure that is developed through quantitative analysis. The theory underlying the paper is that occupational clusters can be defined by a systematic, quantitative analysis of the human requirements for occupations. The occupational human requirements aspect of the analysis is achieved through an Occupational Analysis Inventory (OAI). The cluster structure determined by this research was found to be compatible with the worker trait group information contained in the DOT.

EXHIBIT 4-4(1)
SUPPLY/DEMAND ANALYSIS FOR
VOCATIONAL EDUCATION PLANNING

State	Title Of Project	Source/Contact	Abstract/Description
California	Occupational Education Master Planning	Evergreen Valley College San Jose City College	This study focuses on the decisionmaking components of initiating or curtailing vocational or occupational programs. The study contains components originally developed through CMMIS (now COIS). Major components in the decisionmaking process, besides occupational or employment data, include facilities, equipment, and personnel. The study strives to answer two questions: . What segments of the population should be served and how many people? . What instructional programs should be offered?
Iowa	Prioritizing Iowa's Training Needs	Department of Public Instruction	This document explains how Iowa systematically assigns priorities to training needs. Established criteria provide for an objective rating of relevant training factors, including the following, in each program area. . Manpower needs . Availability of students - Student need - Student interest . Program effectiveness - Attrition - Placement rate - Cost/benefit
	Career Education Needs Information System (CENIS)	Iowa Department of Public Instruction Career Education Division	CENIS is a data collection, analysis, and reporting system designed to provide the following kinds of information for technical occupations: . Current and projected needs of employers in Iowa . Incoming student occupational preferences . Expected supply of graduates . Outcomes of area school graduates during the latest three-year period There are three basic operational subsystems of the CENIS system: Labor Demand, Student Interest, and Three-year Follow-up.

EXHIBIT 4-4(2)

State	Title Of Project	Source/Contact	Abstract/Description
North Carolina	North Carolina Community College System . Strategic Plan 1975-85 . Operating Program 1975-1980	Research Triangle Institute	These two documents discuss the overall planning process for the North Carolina Community College System. The research efforts involved in this project resulted in projections of training requirements that are derived from the projected occupational requirements by multicounty planning regions. These two documents cover a larger number of occupations than the information base on which earlier publications in this research project reported.
Ohio	Local Education Area Planning (LEAP) System	R.D. Balthaser Division of Vocational Education State Department of Education Columbus, Ohio	This system is used by Local Education Areas (LEAs) in their annual planning and forecasting cycle. Statewide demand data are disaggregated by vocational planning district and distributed to local planners. Planners use a program planning and budgeting system (PPBS) approach to identify what programs are necessary to satisfy the needs of people in Ohio.
Oklahoma	Linear Programming Model	Chuck Hopkins	This project was undertaken to develop a Linear Programming (LP) Technique and a data base for utilization in State-level planning of occupational training programs. The project analyzed State-level planning needs and specified data collection requirements. The Linear Programming Model was developed by the Oklahoma State Department of Vocational and Technical Education, Proposal Number R020184. The LP Model includes three matrices, each containing five objective functions. The three matrices are (1) secondary, (2) collegiate/full-time adult, and (3) part-time adult. The five objective functions are: . Maximize Entry-level Wages . Maximize Job Placement . Minimize Program Costs . Maximize Students Served . Maximize Social Benefits

EXHIBIT 4-4(3)

State	Title Of Project	Source/Contact	Abstract/Description
Oregon	Career Program Planning System (CPPS)	See Exhibit 4-2	See Exhibit 4-2
	Study: Guidelines for Using Data in Vocational Program and Curriculum Planning at the State Agency Level		The model developed in this study outlines procedures for a State vocational program planner to follow when planning vocational programs at the secondary or community college level. The procedures required by the model analyze: . Labor market demand and supply . Trainable qualities of selected occupations . Hiring practices of employers . Urgency of need for the program . Adverse impact on other segments of education . Fiscal impact . Student demand as input to the decision to continue, change, terminate, or create vocational programs One important underlying assumption for this planning model is that State support for a Vocational Education program will be given only to those program areas where jobs are available or needed for the maintenance or continued growth of the Oregon economy.
Rhode Island	Rhode Island Model II Volume 1: An Information Network and Simulation Model for Vocational Education Volume 2: A Summary of Occupational Projections for Rhode Island	Reo A. Beaulieu Rhode Island Department of Education Stanley A. Erickson Naval Underwater Systems Center	This project, conducted under a research grant for Vocational Education, had three basic purposes: . To establish within the State of Rhode Island a common demographic, manpower, and educational data base for dissemination and use by planners and policymakers at various levels in different State and local agencies . To develop a process and mechanism for improving communication and coordianting the efforts of State agencies involved in meeting the occupational training needs of the people of Rhode Island

EXHIBIT 4-4(4)

State	Title Of Project	Source/Contact	Abstract/Description
Rhode Island (continued)			. To create an analytical and planning tool to assist the Department of Education in analyzing the impact of different demographic and economic contingencies on the State's educational system and to assess the consequences of alternative educational policies The model developed consisted of five components: . State population data . Labor market data . Student enrollments data . Educational costs . Educational benefits The projections contained in Volume 2 represent departures from BLS procedures for developing projections and result in statistical and economic refinements which the authors believe are more useful for educational planning and improve the accuracy of the projections.

5. OCCUPATIONAL CHARACTERISTICS

The needs and objectives of users of occupational information are key determinants to the development of an occupational information program. Generally, occupational information is directed toward two major functions:

- Planning of training and manpower programs
- Counseling and guidance assistance

Information for planning usually consists of aggregated data concerning occupational groups or clusters of related jobs with emphasis on the number of people in the occupation, demand for workers, and common tasks. The last item, common tasks, is needed to determine course and program content. Counseling and guidance information is about specific occupations, compiled to help persons attain greater understanding of their educational and vocational options. Such information also is of benefit in determining course content, the level at which training or education should be provided, job development, and job placement. The characteristics typifying an occupation are particularly important in developing occupational information for both planning and counseling.

Certain elements, some tangible and some intangible, can be applied to either the aggregate or individual occupational data. While aggregate statistics usually suffice for the planning function, it may be necessary to identify the particular occupation for which training is to be made available, or the job to which an individual may be referred. Counseling and guidance may involve decisions on training or education for an occupation, as well as job selection. Therefore, occupational data to be used for this purpose must provide the counselor with detailed information about the job and its significance in the community and the overall employment structure.

Elements most commonly used to characterize occupations include the following:

- Job content, duties, tasks

- Related occupations, i.e., other jobs which require essentially the same skills and knowledge

- Industry attachment, i.e., the kind of industrial activity in which the occupation is most often found

- Entrance and hiring requirements, i.e., how the worker obtains access to the job and prerequisites for the job, (special licenses, credentials, experience, or training).

- Working conditions, i.e., the circumstances under which the job is performed. Dampness, heat, indoors, and outdoors are illustrative of characteristics related to working conditions.

- Physical requirements. These characteristics focus on the impact of handicaps, or physical strengths and abilities to performance of the occupation
- Pay and bonus, including wages, fringe benefits, non-monetary compensation and time schedules of work
- Worker traits, e.g., interests, attitudes, likes and dislikes which characterize many successful workers in the occupation

Occupational dynamics involve the relationship of an occupation to others, as part of the overall employment structure. Elements pertaining to occupational dynamics include:

- Current number in the occupation, and past and expected trends
- Technological changes, including new or innovative uses of machinery and other equipment
- Means of entry to the occupation (internal versus external labor market)
- Stocks and flows in the occupation. This element involves, primarily, imbalance in the occupation, and reasons for shortages or surpluses.
- Status factors, e.g., prestige, attitudes toward the job by workers and society, etc
- Demographics of workers in an occupation, including such factors as age, sex, race, education and socio economic status.

The users of occupational characteristics information are engaged in planning and/or counseling; however, as delineated below, the use of the information varies considerably.

- Vocational Education, CETA, and other training groups
    - Determine and implement course content
    - Plan and implement prerequisite courses
    - Determine teacher (staff) and facility requirements
    - Evaluate and monitor programs
    - Determine income potential of jobs
    - Assist in selection of clients for training
- SESA's and other placement intermediaries
    - Prepare job orders and select applicants
    - Analyze labor demand and supply, by occupation
    - Develop jobs
- Vocational Rehabilitation specialists
    - Assess client's capabilities to perform particular occupations
    - Assess environmental acceptability for clients

- Program participants ("the public")

  - Assist in making job choices
  - Assist in training and education decisions
  - Explore the "World of Work"
  - Expand economic intelligence concerning the job market

The media used for providing specific occupational characteristics differ widely among the States. Some of the media used and descriptions of the contents of these tools follow.

- Computerized Guidance Systems--A number of States are using one or more proprietary computerized systems. Nine States have developed their own system using grant money provided by the Department of Labor as part of the Career Information System program. In the latter case, most have adapted an available commercial system to their own use, adding local information. Only States that do not participate in the CIS program are depicted in Exhibit 5-1, following tnis chapter. (See Chapter 4 for States involved in CIS).

- Noncomputerized Guidance and Occupational Information Tools--These products are widely varied. As shown in Exhibit 5-2, following this chapter, noncomputerized materials range from purchased video tapes to ingenious needle sort access systems.

- Printed Materials Containing Occupational Characteristics Data--This media form is available in a large number of States. Most of the materials contain local information on such items as wages, job outlook, and training facilities. Examples are listed in Exhibit 5-3.

- Job Search Materials And Tools--In contrast to the preceding informational products, these materials are oriented more to the immediate mission of getting a job. They usually contain tips on preparation for an interview, job leads, and lists of employing establishments. Some of these materials are noted in Exhibit 5-4.

- Information Relating To Training And Occupational Preparation--These materials are directed toward providing detailed information on school programs and the facilities available. The materials consist of directories, guides, and inventories of school vocational programs, by location and program description. Examples are presented in Exhibit 5-5.

Analysis of occupational characteristics materials collected for this study reveals clearly that this information is more detailed and, consequently more difficult and expensive to obtain and maintain than other kinds of labor market data. More specifically, the costs and maintenance problems are attributable to the requirement that certain elements be "localized" to a relatively small geographic area if they are to be useful. Frequent updating is critical to the credibility and usefulness of the information. Meeting these requirements is costly in terms of dollars and staff resources because most of the information must be derived by research and on-site surveys.

The most common element found in characteristics information and the one most often proclaimed as needed, is wage information. Most States have some data on wages, obtained either through their own resources or from national (usually BLS) surveys. Most products showing wage characteristics follow the same pattern, therefore specific products are not cited in the study.

EXHIBIT 5-1

COMPUTER-BASED SYSTEMS FOR DELIVERY OF OCCUPATIONAL INFORMATION

State	Title Of Project	Source/Contact	Abstract Description
California	Eureka, Sigi, CIVIS, GIS, Discover, et al.	Commercial systems	Occupational guidance and decisionmaking information is provided by these systems though little local information is included. Most provide job descriptions, worker traits, hiring specifications, national outlook, and training requirements. Further, some systems include data on students. All are interactive.
New Jersey	Computer-assisted Career Information System (CACIS)	Asbury Park Computer Center	The primary objectives of CACIS are to generate student interest in career planning and to improve the realism of student career decisions. The substance of the CACIS model is the interactive process between the counselor and the student. Services of CACIS include: . Development of student data bank . Development of student profiles for occupational information and counseling educational information . Educational information . Job placement . Development of assessment instruments . Follow-up of graduate students and dropouts . Longitudinal studies in career areas . Development of localized resource data banks, which include people in the community willing to assist the school, companies, agencies; and resources in the school such as films, books, periodicals, etc.
North Carolina	CIS	SOICC	When completed, CIS will be a computerized delivery system, using the SOC coding structure.

EXHIBIT 5-2
NONCOMPUTERIZED GUIDANCE AND OCCUPATIONAL INFORMATION TOOLS

State	Title Of Project	Source/Contact	Abstract Description
California	Microfiche OIDS	SESA, Southern California	The microfiche presents 114 worker traits group: extensive information on job characteristics and training facilities; lists of potential employers; and job search tips.
Michigan	MOIS-Microfiche	MOIS	Information on microfiche is the same as that on an MOIS computer-based system
Oregon	Search; CIS-Needlesort		Decks with information comparable to that available in the CIS package comprise the needlesort system. Access to occupational characteristics and requirements is by needle through punched cards, using a Quest Questionnaire.
Texas	OIDS-Microfiche	SESA	The Texas system is an adaptation of the California System.
Various	VIEW	Vocational Education and LEAs	VIEW is composed of aperture and camera cards that provide four pages of information on a specific occupation. Each view script covers job description, preparation and training needed, job prospects, wages, working conditions, and related jobs. VIEW is a commercial package, so with the exception of a few items, data are standard copy; wage and outlook data are local. Also, the package includes an apprenticeship deck for the same States.

EXHIBIT 5-3(1)
PUBLICATIONS AND PRINTED MATERIALS CONTAINING OCCUPATIONAL CHARACTERISTICS

State	Title Of Project	Source/Contact	Abstract Description
Arizona	Occupational Guides	Labor Market Information Research and Analysis, Bureau of Employment and Training Department of Economic Security - Vince Cullinane	A series of 65 loose-leaf occupational fact sheets. Each sheet includes job description, training and other qualifications, wages, lines of advancement, where employed, and employment outlook into the 1980's.
	Counselor's Newsletter	Labor Market Information Research and Analysis, Bureau of Employment and Training, Department of Economic Security - Vince Culliane	A monthly newsletter sent to vocational counselors to keep them appraised of labor market and job search information programs, and publications of the U.S. Department of Labor and the U.S. Office of Education
Arizona	Careers Today, MiniGuides	SESA	These publications describe job characteristics, job search tips, related jobs, and jobs in industry, wages, outlook, qualifications and training.
	Career Education Matrix	Arizona Department of Education, Career Education	The matrix is a "road map" for career education in Arizona which has received international recognition. The matrix illustrates how career education provides for program articulation in four developmental grade levels: primary, intermediate, junior high and high school.
	Career Education: Project Profiles	Career Education Projects, Arizona Department of Education	Project profiles describe various exemplary projects being conducted throughout Arizona
California	Career Guides for Entry Occupations	Occupational Field Center of SESA	Training, areas of work, national job outlook, promotion or advancement potential, and related jobs are discussed.

EXHIBIT 5-3(2)

State	Title Of Project	Source/Contact	Abstract Description
California (continued)	Occupational Guides	SESA	These guides address job duties, employment outlook, working conditions, pay and hours, entrance requirements, training, and promotions, and how to find the job, and direct the reader to additional sources of information.
Florida	Broward County Employers' Training Needs Assessment	Dr. Mantha Mehallis Project Director, Broward Community College	Employers' (industrial, non-industrial and government) training needs assessment with one, two, and five-year projections utilizing personal interviews with employers used to determine training needs, which educational agencies could best fulfill the needs, and to inform employers of results in order to begin planning for the needed programs. Also analyzes employee qualities, recruitment, incentives, employment and training of the handicapped, and Affirmative Action.
Hawaii	A Guide to Occupations in Hawaii	State Director for Vocational Education, University of Hawaii	An updatable 8-volume set of loose-leaf binders each covering an occupational family with supporting search advice
Idaho	Occupational Guide Series	SESA	Three booklets provide helpful data on specific occupations. Local data is obtained via a questionnaire administered to employers.
Iowa	Career Guides	SESA	These booklets designed to provide guidance to those entering the job market are based on qualifications required to enter a specific occupational field, except for a special volume on licensed occupations in Iowa. Each booklet contains information about the requirements, working conditions, and employment outlook for every occupation within its covers. Guides have been published for the following areas:

EXHIBIT 5-3(3)

State	Title Of Project	Source/Contact	Abstract/Description
Iowa (continued)			Building Trade Careers Clerical Careers (recently revised) Food Services Careers Health Careers (recently revised) Licensed Occupations in Iowa (revision soon to be released)
	Careers	SESA	These booklets contain short statements of the characteristics of a job cluster, e.g., clerical jobs.
Kansas	Kansas Job Guides	SESA	These guides are a series of one-page statements covering job duties, working conditions, wages, hours, employee benefits, entry requirements, method of entry, training needs, and job outlook. The series comprises two bound volumes. Volume I is about jobs needing a high school education or less, and Volume II is about jobs requiring post-high school education or training.
Maine	Careers in the Maine Woods	SESA	This publication addresses, for careers in the Maine woods, job duties, work environment, physical and educational requirements, and advancement. The publication includes a glossary of logging terms, a map of job site concentrations, and an industry organization chart.
	Occupational Monographs	SESA	The monographs are four page pamphlets that describe selected occupations. Information covers job duties, work environment, physical requirements, earnings, hours of work, future demand, advancement potential, common attitudes, interests and temperaments, education requirements, other requirements, location of jobs, institutions that provide training, and related occupations.
Massachusetts	Manpower Data Package for Planning Employment and Training Programs Based Upon the 1976 Survey of Income and Education	Katherine Mazzeo Research and Program Development, Department of Manpower Development	Detailed information on the demographic, labor force, and earnings characteristics of Massachusetts residents from the 1976 Survey of Income and Education. Data was generated for all persons, youth, and for persons in poverty in the State of Massachusetts.

EXHIBIT 5-3(4)

State	Title Of Project	Source/Contact	Abstract/Description
Michigan	MOISCRIPTS	MOIS	These 14-page documents provide substantial information on selected occupations including a job description and discussions of working conditions, worker requirements, earnings and advancement, employment outlook, educational requirements, review questions, and additiional sources of information.
Missouri	Occupational Profiles	Division of Employment Security	Profiles provide the following information related to individual occupations: job description, working conditions, pay and hours, personal characteristics, entrance and training, advancement, benefits, disadvantages, licenses and unions, employment outlook, and sources of additional data.
Nevada	Occupational Guides	Employment Security Division	Information headings on specific occupations include the job and job duties, employment outlook, pay and hours, working conditions, promotion, entrance requirements, how to train, finding the job, additional information, and acknowledgements.
New Jersey	Handbook of Occupations and Projections for Employment (HOPE)	Department of Labor and Industry	The objective of this project was to establish a labor market analysis curriculum that would integrate better than prior publications, the realities of the world of work with the world of education. This publication presents brief descriptions of job duties, industry settings, wages, and employment prospects in occupations. Work experience necessary, suitable interests and abilities, and educational, licensing, or certification requirements are listed.
New York	Job Profiles	Division of Employment	Profiles of applicant and job-order characteristics for selected occupations are prepared for the various labor market areas, based on ESARS data. Information in each profile includes job description, vocational preparation required, and job requirements, job characteristics, common applicant characteristics, number of openings filled, number of openings currently on file, and a comparison of the characteristics of job seekers referred and job seekers placed.

EXHIBIT 5-3(5)

State	Title Of Project	Source/Contact	Abstract/Description
Oregon	Miniguides	SESA	These brochures include, for an occupation, a job description, worker traits and specifications, pay, hours of work, industrial attachment, related jobs, and how and where to train.
Pennsylvania	Job Opportunity Guide	SESA	Small brochures cover the job description, place of work, skills needed, pay, hours, training requirements, and related jobs.
	PENNSCRIPTS	State Department of Vocational Education	These microfiche-based occupational descriptions included such information as working conditions, worker requirements, earnings potential, employment outlook, educational requirements, review questions, and additional sources of information.
South Carolina	Entry Occupations in South Carolina	Employment Security Commission	The purpose of this publication is to provide a guide to jobs at the entry level and to services available to job seekers who are entry workers or who need training or other services to help them become employable. The occupations included generally are suitable for applicants with a high school education or less. Some information is provided on the nature of the jobs, the requirements, working conditions, employment prospects, and entry wage rates.
South Carolina	Wage Rates and Fringe Benefits	Employment Security Commission	This report contains entry wage rate data for job openings received from manufacturing and non-manufacturing firms in the Charleston, Columbia, Florence, and Greenville Job Bank areas. Fringe benefits are listed as either frequently observed or infrequently observed. Wage rates and fringe benefits are representative only of occupations coded to nine digits of the DOT that are listed with the Employment Service.

EXHIBIT 5-3(6)

State	Title Of Project	Source/Contact	Abstract/Description
Wisconsin	Information Packets	* Occupational Analysis Field Center, SESA	These bound books are industry-based and contain descriptions of processes, career opportunities, earnings, benefits, working conditions, training, and entry. Also, a packet contains a one-page summary of each job in the subject industry.

Note: This is one of several field centers involved in occupational analysis for use in development of the Dictionary of Occupational Titles. Below is a complete listing of the eleven Occupational Field Centers.

Arizona Occupational Analysis
Special Project
Bureau of Employment and Training
1525 W. Jefferson
Phoenix, AZ 85005

California Occupational Analysis
Field Center
1525 South Broadway
Los Angeles, CA 90015

Florida Occupational Analysis
Field Center
402 Reo Street, Suite 108
Tampa, FL 33609

Michigan Occupational Analysis
Field Center
7310 Woodward Avenue
Detroit, MI 48202

Missouri Occupational Analysis
Field Center
505 Washington Avenue
St. Louis, MO 63101

New York Occupational Analysis
Field Center
Two World Trade Center
New York, NY 10047

North Carolina Occupational
Analysis Field Center
310 West Martin Street
Raliegh, NC 27611

Texas Occupational Analysis
Field Center
Texas Employment Commission
Building
Austin, TX 78778

Utah Occupational Analysis
Field Center
Dept. of Employment Security
174 Social Hall Avenue
Salt Lake City, UT 84147

Washington State
Occupational Research
Field Center
300 West Harrison
Seattle, WA 98119

Wisconsin Occupational
Analysis Field Center
106 E. Doty
Madison, WI 53702

EXHBIIT 5-4(1)
JOB SEARCH
MATERIALS AND TOOLS

State	Title Of Project	Source/Contact	Abstract Description
Arizona	Job Openings--Who, What, Where, When	SESA	Frequently listed occupations in Arizona are described in terms of labor availability, table for wage conversion, Standard Industrial Classification Codes, and a Directory of Employment Service offices.
Connecticut	Looking for a Part-time Job, Jobs for Middle-aged Job Seekers	SESA	This publication is composed primarily of short descriptions of kinds of jobs most readily available to middle-aged and part-time employees.
Delaware	How to Get and Hold the Right Job	SESA	This tool discusses decisionmaking and self-assessment, and prepares the reader to develop a personal work history and profile, take a job interview, and write a resume.
District of Columbia	Job Bank Analysis	SESA	This analysis is published monthly and provides occupational characteristics (salary, education, and experience requirements) as well as the geographic location of the jobs processed through the Washington Metropolitan Area Job Bank. Data are compiled from the daily job orders received during the calendar month. Jobs are evaluated in terms of number and location of orders, number and location of openings, employer's educational requirements, salary offered, and employer's experience requirements.
Hawaii	Summer jobs in Hawaii	SESA	This publication lists potential summer jobs by group. It includes information on governmental programs for youth, college student programs, summer fun programs, and job searching in Hawaii.

EXHIBIT 5-4(2)

State	Title Of Project	Source/Contact	Abstract/Description
New York	Hiring specifications	SESA	Specifications contain data on wages, education and experience required, the work week, and the industry; from job openings received and processed by the Employment Service in the City of New York.
South Carolina	Firms that Employ Workers in Selected Occupations	SESA	This is a computer print-out which lists, by occupation, employers who currently employ individuals in the occupations.

EXHIBIT 5-5(1)
INFORMATION RELATED TO
OCCUPATIONAL TRAINING
AND PREPARATION

State	Title Of Project	Source/Contact	Abstract Description
Arizona	Comprehensive Manpower Delivery System Outline	Office of Economic Planning and Development-Bill Vanderbosch	This publication catalogs the full range of manpower agencies and programs in Arizona. Each entry gives information on the geographic area served; the program's target groups; training activities and services available; most recent funding levels; and the agency's planning cycle
Connecticut	Vocational Career Guide	State Department of Education	This guide is intended to serve as a comprehensive inventory of vocational career education in Connecticut. Its purpose is to assist students and guidance counselors in learning about the schools and programs in Connecticut that provide formal education for careers below the baccalaureate level, including public and private schools, colleges, and universities.
	Health Careers in Connecticut	Connecticut Institute for Health Manpower Resources, Inc.	This report attempts to list training opportunities available in high schools, two- and four-year public and private colleges, and vocational technical schools, health care facilities, State agencies, and universities. Part I lists the names and addresses of all Connecticut institutions that offer health education or training programs, including a roster of the individual programs operated by each school agency and health care facility. Part II lists all health occupations for which educational opportunities exist within the State. Part III is a chart that shows the location of employment opportunities for selected occupations in health care and related facilities in Connecticut. Part IV gives general descriptions of the listed occupations and professions.

EXHIBIT 5-5(2)

State	Title Of Project	Source/Contact	Abstract/Description
Hawaii	Directory of Educational Requirements for Selected Occupations	SESA	Occupations which, based on the 1970 Census, have 100 or more persons employed are listed. Data are available on educational requirements, institutions of higher education, and agencies offering free employment services.
Iowa	Opportunities in Iowa Area Schools	Department of Public Instruction	This booklet is an initial source of information on Iowa's area schools. It is intended to provide, in a single publication, an explanation of the Statewide system of area schools.
Louisiana	Louisiana's Occupational Education Program	State Department of Education	This booklet presents general descriptions on various course offerings in vocational-technical schools. A course outline is provided and the schools that offer the course are listed.
Nevada	Labor Unions, Committees and Licensing Agencies	Employment Security Department	This publication was prepared to serve three needs: (1) list the local unions for individuals with trade skills; (2) serve as a directory of joint apprenticeship committees and approved on-the-job training programs; and (3) provide a comprehensive source of Nevada's occupational licensing agencies.
	Occupational Training Directory	Manpower Information and Research Section	Occupational training information is listed alphabetically, by subject and by the name of the organization. Data include background information of the school or training agency, general requirements for admission, course offerings, fees, and how to apply. Also provided is information regarding veteran-approved training courses.
New Jersey	An Inventory of Health Professions Education Programs	State Department of Higher Education	This document provides information on post-secondary health professions, education programs, and mental health professions' education programs offered in New Jersey colleges, hospitals, and vocational schools.

EXHIBIT 5-5(3)

State	Title Of Project	Source/Contact	Abstract/Description
New Jersey (continued)	Institutional Characteristics of New Jersey Licensed Colleges and Universities	State Department of Higher Education	This document contains selected institutional characteristics and a complete listing of all degree or certificate programs approved by the New Jersey Board of Higher Education.
North Carolina	Educational Guide	North Carolina Community Colleges and Technical Institutes	The guide provides: . General information regarding admission policies, guidance and counseling services, tuition and fees, financial aid, student activities, and job placement . Brief explanation of the types of educational programs available with a listing of courses and curricula offered . Curriculum offerings in each institution . Descriptions of the curricula offered and a listing of the institutions that offer them . Descriptions of the continuing education programs offered in the State
North Dakota	Directory of Postsecondary Vocational-Technical Education		The Directory is a compilation of the postsecondary vocational-technical education programs offered in the State of North Dakota by both public and private vocational schools. The Directory is divided into three major categories: . Contents By Cluster--An alphabetical listing of occupational programs offered and schools that offer specific training in each occupation . Contents By School--An alphabetical listing of the public and private vocational-technical schools. Listed under each school are the programs offered.

EXHIBIT 5-5(4)

State	Title Of Project	Source/Contact	Abstract/Description
North Dakota (continued)			- Program Descriptions--A detailed outline of training programs. Information on each program includes: program title, name and address of school, contact person, nature of work, starting dates and length of programs, helpful high school courses, job opportunities, admission requirements, expenses, and scholarship information.
Vermont	Adult and Continuing Education Study Guide	Vermont Advisory Council for Vocational Technical Education	A survey was conducted of schools, businesses, government agencies, and nonprofit institutions to gather data on training made available to employees or the general public. Extensive information is provided on each organization that responded.

6. DELIVERY OF OCCUPATIONAL INFORMATION

Appropriate delivery of occupational information can determine its effectiveness. When information is not clearly presented, credible, timely, comprehensive or readily accessed, even the best information is of no value.

Data producers and data disseminators can maximize effective delivery of occupational information by becoming familiar with the information needs of each user group. Only information that is of value to the users should be provided. Data producers and data disseminators should answer the following questions about each of their major users:

- What type of information is needed?
- For what purpose is the information to be used?
- How often is the information used?
- What level of accuracy is required?
- What level of detail is required?
- How much explanation or analysis should be provided?

The answers to these questions furnish the means for deciding what information to provide and how to provide it.

Once the occupational information needs of users have been identified the optimal delivery mechanism must be established. "Delivery mechanism" refers to the medium and format used to communicate the information. Examples of methods used to delivery occupational information are television, radio, books, pamphlets, newsletters, newspapers, microfiche, aperture cards, microfilm, videotape, tape recordings, computer printouts, and computer terminals. The costs of the various delivery methods differ greatly. Data disseminators need to weigh the relative costs and benefits of various mechanisms to identify the method that costs the least per use and still meet the user's needs. The decision on the best delivery method should also consider the flexibility and costs necessary to update information.

Identifying the occupational information that is to be provided and the best delivery method is only two-thirds of effective delivery of occupational information. The third important element of information delivery is packaging. Although one cannot judge a book by its appearance, a well designed cover and layout increase the chances of the information being read. The importance of packaging is well known to individuals familiar with the marketing of consumer products. On the basis of a quick glance, people form judgements on the content, quality, and purpose of products.

Packaging of information should not be prematurely judged as a waste of money. Information that is expensive to produce can be under-utilized if poorly packaged. The additional funds required to increase the appeal and utility of occupational information can be cost-justified on the basis of cost per use. If more people read and use the information, the costs of production are spread over a wider usage base.

Occupational information is used by three main user groups: (1) planners, (2) counselors, and (3) individuals seeking either their first job or a new job. Different types of information and different delivery mechansims are appropriate for each user group. General labor market information is useful to all user groups. Exhibit 6-1, following this chapter, provides examples of source of labor market information.

It is important to provide detailed information on specific jobs. Job seekers want to know what a job is about, what requirements must be met, and what employment opportunities exist. Counselors need to be familiar with occupations to provide meaningful assistance and advice to their clients. Planners are concerned with curriculum development and program evaluation. In Chapter 5, Exhibits 5-1 through 5-3 provided examples of sources that contain job characteristics data.

Information on training and education deserves special attention. The choice of a school or training program is an important decision; individuals want to be well informed on the characteristics of each educational and training program before making a decision. Planners need to be aware of all schools or programs which train persons for specific occupations. Planning a school curriculum should be done with consideration of ongoing and projected programs throughout the area. Some examples of sources of information on training were listed in Exhibit 5-5.

To increase the availability and usefulness of occupational information, certain States have initiated various occupational information-related services and facilities. Employer "hot lines", placement services, and career centers have been used effectively. Some examples of the services offered and the facilities used for providing occupational information are displayed in Exhibit 6-2.

Further, some States have developed job aids to assist counselors and planners in using occupational information. Also, guides have been published that explain the approach or methodology for developing occupational information programs. A selection of tools for counselors and planners is presented in Exhibit 6-3.

Appropriate and effective delivery of occupational information is a key element in a comprehensive occupational information system. Information must be tailored to users' needs, delivered in a cost-effective manner, and packaged to ensure maximum user acceptance.

EXHIBIT 6-1(1)

PUBLICATIONS FOR PERSONS SEEKING GENERAL OCCUPATIONAL INFORMATION

State	Title Of Project	Source/Contact	Abstract Description
Alabama	Industry 1977 New And Expanding	Alabama Development Office	The report lists announced new and expanding industries by name, location, and product line. For many of the firms, the announced dollar value of capital investment and number of employees are also listed. The source of the data is not cited in the document.
Arizona	State Agency Guide for Occupations and Businesses	Office of Economic Planning and Development - Erv Hansen	The Guide describes briefly the functions and responsibilities of each State agency. The Guide provides fee information and indicates where more detailed information may be obtained. The Guide is intended to be of assistance to anyone establishing a business or professional practice in Arizona.
	Various publications	Labor Market Information, Research and Analysis, Bureau of Employment and Training, Dept. of Economic Security - Vince Cullinane	The Arizona Department of Economic Security publishes a wide variety of well designed documents covering an array of topics and addressed to various user groups. The publications include the following: . Blue Collar, White Collar, and Service Occupations . Maricopa County Small Employer Wage Survey, 1977 . Profiles--Employer's Guide to Professional Personnel . Arizona Occupational Guides . Careers Today--Government Careers . Guidelines for Teachers Seeking Employment in Arizona . Choosing a Vocational School . Self-appraisal Inventory . Employer's Guide to CETA Programs . Labor Supply: Concepts and Sources . Sources of Free Occupational Information . Directions--The Counselor's Newsletter . Applying for Government Jobs . Using Your Library to Explore Careers and Find a Job . Arizona-Licensed Occupation Requirements . 200 Ways to Put Your Talent to Work in the Health Field

EXHIBIT 6-1(2)

State	Title Of Project	Source/Content	Abstract/Description
Arizona (continued)			. How Does Arizona Compare? . A Guide to Labor Market Terminology . Occasional Paper Series . The Handicapped-Employer Information System (HEIS) . Employing the Deaf . Jobs for Which...Series . Arizona Job Talk . Preparing Yourself for the Job Interview . Selling Yourself with the Job Application Form . Summer Employment - It's a Two-Way Street . Your First Job . How to Prepare a Salable Resume . Finding a Good Job in the Want Ads . Jobseekers' Guide to Arizona . Planning to Work Around Food? . Job Training Opportunities with CETA--Pima County . Helpful Hints for Job Seekers
	Directory of Community Based Organizations providing Manpower Services	Office of Economic Planning and Development - Bill Vandenbosch	The directory gives a brief history of each CBO, including its national affiliation. It provides information on current sources of funding, the number of CETA and non-CETA clients and budgets for FY 1977 and FY 1978. It also contains information about training activities, employment related services and other services provided by each CBO.
Colorado	A Guide to Colorado Employment-Related Directories	Metro Denver Urban Coalition Employment Task Force	The Guide is an aid to locating the most useful directories available on the subjects of obtaining or retaining a job, or recruiting and retaining an employee in a job. The Guide is designed to be used by employers, job placement or counseling agencies, school counselors, and individuals seeking a job or training for employment.

EXHIBIT 6-1(3)

State	Title Of Project	Source/Contact	Abstract/Description
Colorado (continued)			The directories in the Guide are indexed by the following subjects: . Job counseling and referral . Personnel recruitment sources . Employers, industry groups, and associations . Training and occupation requirements . Equal employment opportunity and civil rights . Employment support services
Delaware	The Job Interview		This brochure discusses ways to prepare for an interview and essential documents, and provides a fact sheet to fill in and take along.
	Tips on Test Taking	SESA	The document describes kinds of preemployment tests by name and general content, and how to handle oneself before and during the test. Sample questions are included, too.
Florida	"So, You're Going To Hire a Handicapped Person"	Occupational Institute Florida International University, Miami	Designed to aid employers. Includes information on orientation, tax benefits, public relations, affirmative action and insurance
	CAREER BOOK	Center for Career Development Services	Systematic approach to considering career needs, interests and goals for decision making. Linked to Florida VIEW
	Employability Skills Series	Career Education Center, Florida Department of Education	A set of competency-based instructional materials that teach the cross-vocational, non-technical skills needed to get and keep a job.

EXHIBIT 6-1(4)

State	Title Of Project	Source/Contact	Abstract/Description
Hawaii	Licensed Occupations in Hawaii	Department of Labor	This report provides current information on examination, license, and fee requirements for 41 occupations in Hawaii. It has been prepared to provide general information on the different occupational licenses or certificates that are issued by the State Boards, Commissions, and Departments.
	Sources of Free Occupational Information	Department of Labor	This is a bibliography of free occupational information. The names and addresses included were compiled from materials published by the Hawaii State Department of Labor and Industrial Relations or received from local community agencies and educational institutions.
	You As An Employee In The World Of Work	State Commission on Manpower and Full Employment, State Advisory Council on Vocational Education	This report was written by the Center for Labor Management Education, University of Hawaii, with the assistance of many of the State's labor unions and organizations. The purpose of the report is to promote in students a greater awareness and understanding of the role of labor in the world of work--its history, traditions, purposes, goals, and organizations.
Idaho	VIEW Career Exploration Workbook	Division of Vocational Education and the Tri County Special Services	The Workbook is designed to help individuals to choose appropriate careers through better understanding of themselves. The Workbook also helps in relating personal information to the job information in the Idaho VIEW deck.

EXHIBIT 6-1(5)

State	Title Of Project	Source/Contact	Abstract/Description
Iowa	Opportunities for Apprenticeship	Iowa Department of Job Service Research and Statistics	Information contained in this booklet outlines the apprenticeship program. Included is a list of occupations which are approved for apprenticeships and a description of the responsibilities of the Joint Apprenticeship and Training Committee, the administrative authority for apprenticeship and journeymen training programs. For persons considering an apprenticeship program there are sections defining the requirements and application procedures, pre-apprenticeship training, apprenticeship contracts, types of training, and wages during the apprenticeship duration. This publication is valuable to people considering entry into a skilled profession which requires considerable systematic on-the-job training.
Maine	Job Developer's Guide	SESA	The Guide lists employers who are potential hirers of workers in specific occupations.
	Occupational Licensing Requirements	Employment Security Commission	This booklet provides information on licensing requirements for occupations. For each relevant occupation, the following data are supplied: licensing agency, qualifications, examination costs, type of examination, frequency of examinations, license fee, reciprocity or endorsement clauses, and licensing authority control.
Maryland	Career Development and Job Hunting Guide	SESA	This Guide contains information about the Job Search Information Unit, Career Orientation, Job Hunting Guide, self-appraisal, decisionmaking, job search strategy, job interviews, professional employment, et al.

EXHIBIT 6-1(6)

State	Title Of Project	Source/Contact	Abstract/Description
New Hampshire	How New Hampshire Employers Evaluate Their Employees	Richard Gustafson and Patricia McLarky Groves, Keene State College	Interviews were conducted with 23 employers across the State to learn of their current procedures for employee evaluation. The interview instrument posed the following five questions to direct the discussion: . Does your company/organization use a written evaluation form that deals with the performance of employees? . In hiring new personnel, what are the six factors you feel are most important? . How are employee evaluations for pay raises or promotions conducted? . Who is involved in the evaluations? . What are the most common reasons for terminating an employee? This report documents the findings of the study.
New Mexico	How to Look For A Job in the Albuquerque Area	Charles Lehman, Economist, Research and Statistics Section, Employment Services Division, Human Services Department P.O. Box 1928 Albuquerque, NM 87103	This booklet is prepared to help students learn more about their employment interests and local job opportunities. There are check-lists and questions to guide decision-making about types of work. An additional section contains information on apprenticeship, resumes, and interviews. The booklet includes a list of the major industries found in the Albuquerque area, the names of the largest companies in each industry, and the common occupational skills they employ.
Ohio	Let's Get A Job--CETA	SESA, Job Bank	The audience for this publication is young people. Contents include letters of application and applications, job interview tips, and a summary of jobs in demand.
Wisconsin	PACKIT		PACKIT describes resume writing, job types, personal data, and the relevancy of military information in job hunting.

EXHIBIT 6-2(1)

FACILITIES AND SERVICES FOR PERSONS SEEKING OCCUPATIONAL INFORMATION

State	Title Of Project	Source/Contact	Abstract Description
Arizona	Hot Line for Qualified Handicapped Workers		Hot Line provides a single point of contact where employers can call when they wish to recruit qualified handicapped applicants. It also acts as a source of information and assistance to employers in meeting their affirmative action requirements.
	"It's What You Can Do That Counts	Career Education, Arizona Department of Education	A three-hour training package (including a film) for business leaders, personnel managers, and counselors to alleviate stereotyping. The package provides methods to structure jobs for the handicapped and assists in the consideration of positions for the handicapped.
	Resource and Employment Assistance for the Handicapped (REACH)	Rehabilitation Services Bureau, Department of Economic Security - Jim Griffith	Vocational rehabilitation job developers in Phoenix are developing a resource library, and disseminating employment information, including career exploration information.
	Apprenticeship Information Center	Manpower Services, Department of Economic Security - Boyd Dismukes	Information center for apprenticeship programs
	Research Coordinating Unit (RCU)		The Division of Career and Vocational Education's program of improvement and dissemination effort. Projects for program improvement and coordination with other groups are selected through Program Improvement Request for Proposals documents.
California	Vocational Rehabilitation District Occupational Resource Specialists		The primary objective of a Vocational Rehabilitation District Occupational Resource Specialist is to provide consultation in vocational planning to the case-carrying staff. He/she gathers, evaluates, interprets, and disseminates occupational information.

EXHIBIT 6-2(2)

State	Title Of Project	Source/Contact	Abstract/Description
California (continued)	A Study of Career Centers in the State of California		The Study addresses a series of questions that needed answers before additional resources could be committed to expansion of Career Centers in the State of California. The questions were: . What is the current state-of-the-art in California career centers? . Which career center materials and programs are students finding most helpful? . What effect are career centers having on students? . Are career centers an effective means of providing career guidance services to students? The study had four major objectives. . First, to describe the staff composition, facilities, materials and equipment, programs, and priorities of existing career centers . Second, to determine, from the student's point of view, the effectiveness of career center materials, equipment, and programs . Third, to determine the effectiveness of career centers on students who use them . Fourth, to provide a final report that synthesized the findings of the study and made recommendations to assist career guidance personnel in implementing and improving career centers
District of Columbia	Vocational Guidance and Placement Services		This is a vocationally oriented program established in six career development centers and three senior high schools. The primary goal of the program is to define and implement a pattern of vocational guidance and placement services for students. The services are designed to develop positive attitudes, self-awareness, and vocational awareness, and to provide vocational exploration and intensive job preparation.

EXHIBIT 6-2(3)

State	Title of Project	Source/Contact	Abstract/Description
Florida	Career Mall	St. Petersburg Vocational School	This "walk thru" display enables visitors to see various occupations in real work settings.
	Curricular - Career Information Service (CCIS)	Career Development Services, 110 Bryon Hall, Florida State University, - Dorothy Domkowski	Offers individuals a career decisionmaking model, career information, a self-assessment program, other resources, and employability skills assistance.
Massachusetts	Skills Bank Network		The Skills Bank Network is a system for linking employers and graduates of occupational education programs in Massachusetts. Any interested employer can contact the Skills Bank Specialist nearest to his/her business and specify needs for new employees. The Skills Bank Specialist consults a master list containing the number of graduates per school in the region, classified according to their job skills. The employer is then given the telephone number of the Director of Placement in the school or schools that have trained graduates appropriate to her/her needs.
Michigan	Vocational Rehabilitation Services Placement System		The Placement System is composed of the following elements: (1) Employer Account System, (2) Employer Services System, (3) Job Bank, (4) Skill Bank, (5) Job Seeking Skills Clinic, and (6) Job Club. This is a non-automatic, but systematic approach to finding suitable employment for clients.

EXHIBIT 6-2(4)

State	Title Of Project	Source/Contact	Abstract/Description
New Jersey	Asbury Park Computer Center (Also described in Exhibit V-I)		The Asbury Park Board of Education, in conjunction with the New Jersey State Department of Education, Division of Vocational Education and the United States Office of Education, has conceptualized and established a computer-based system of operations that is relevant to the needs of education. The aim of the system is to develop and provide task services to all interested school districts in the State. Among the task services currently available are: . CACIS (Computer-assisted Career Information System) . GIS (Guidance Information System) . Instructional Usage . Student Administrative Usage . Financial and General Administrative Usage
	Occupational Resource Center	State Department of Education	The Center makes available many services and resources, including: . ERIC microfiche collection--Over 110,000 documents . Doctoral dissertations--Over 1,500 available on microfilm for loan . Periodicals--Over 300 . Document collection--Current, nationwide developments in Vocational/Technical and Career Information . Multi-media software for loan--Films, filmstrips, film loops, transparencies, and kits . Audio-cassettes--The "Voices For Careers" collection covering all aspects of career education . Educational simulation games . Publications . Model career resources center . Machines for effective research . Educational technology display area

EXHIBIT 6-2(5)

State	Title Of Project	Source/Contact	Abstract/Description
New York	Labor Market Information Network	Combined agencies	Advisory groups composing this Network cover a number of occupational and industry categories. Concentration is on entry-level jobs.
Oklahoma	Mobile Career Vans		The objective of the vans is to provide occupational and related information to persons living in rural areas.
Tennessee	Research Coordinating Unit (RCU)	University of Tennessee, College of Education, Tennessee State Board for Vocational Education	RCU focuses on four objectives: (1) collect and disseminate information that will benefit teachers, administrators, and counselors, (2) stimulate and encourage occupational education research, (3) coordinate occupational research activities, and (4) conduct occupational research and development projects. These objectives are accomplished through the following six major program areas: (1) Information Retrieval and Dissemination System (2) Career Education Information, (3) Mini-grant Program, (4) Tennessee Management Information System (5) Project INFOE, and (6) special projects.
Utah	Project JOIN--An Interagency Proposal for Presentation to Local Manpower Planners		The Division of Vocational Technical Education, the Office of Manpower Affairs, and the State Job Service Office created an interagency task force. The result of its efforts was a three-phase program called "JOIN", (Joint Occupational Information Network) to pool efforts and resources through interagency contracts to improve delivery of community services. Phase I provides for an out-stationed placement interviewer and vocational counselor from Job Service at each of the vocational technical training institutions. Phase II provides for improving local area occupational information by creating

EXHIBIT 6-2(6)

State	Title Of Project	Source/Contact	Abstract/Description
Utah (continued)			area occupational information specialists. Phase III calls for installing an automated guidance system in each vocational technical training institution.
	Skills Center North Assessment Project		This BUASA pilot program was to determine the benefits that could be derived from the enrollment of long-term unemployed individuals in Assessment/Pre-employment activities. Clients were enrolled in a program that involved five components: Computer Evaluations, Hands-on Exploration, Pre-employment Training, In-class Exploration; and the Career Awareness Laboratory.
Vermont	Career Education Aides, Service Education		Fifty-five career education aides have been hired (CETA funding) to work throughout the school system as facilities and transmitters of career education ideas. For example, basic skills may be obtained through "kitchen" schools, where the three R's are taught in the home to persons unable to get to school facilities. Correspondence courses are offered for obtaining GED accreditation.

EXHIBIT 6-3(1)
TOOLS FOR COUNSELORS
AND PLANNERS TO UTILIZE
OCCUPATIONAL INFORMATION

State	Title Of Project	Source/Contact	Abstract Description
Arizona	Information References: Social and Economic Planning	Office of Economic Planning and Development - Bill Vanderbosch	This document provides a general description of the social and economic data on Arizona available from 63 State and Federal agencies in Arizona. It is based on a uniform survey of more than 100 agencies, conducted primarily through personal interviews over a nine-month period. The agency summaries describe data generated at regular intervals (monthly, yearly, etc.) though some significant one-time studies are also included. Only reasonably accessible data are described (i.e., generally confidential data are not described.)
California	Cross-code Index		The Cross-code Index links three national occupational information coding systems: (1) the United States Office of Education program codes, (2) the Census occupational codes, and (3) the Dictionary of Occupational Titles codes.
	Prime Sponsor Occupational Information Survey		The Survey was conducted to determine the availability of occupational information as it related to CETA Title I participants enrolled in classroom or on-the-job training programs.
	Description and Comparison of Nine Computer-based Guidance Systems		A one page matrix provides helpful information on 23 attributes of the following computer-based guidance systems: . Computerized Career Ed System (CCES)--Navy Personnel Research and Development Center . Systems Exploration and Research for Career Help (SEARCH)--State of Oregon Employment Division . Guidance Information System (GIS)--Time Share Corporation . Occupational Information Delivery System (OIDS)--Time Share Corporation

EXHIBIT 6-3(2)

State	Title Of Project	Source/Contact	Abstract/Description
California (continued)			. California Career Information System (EUREKA)--Eureka Project . Computerized Vocational Information System (CVIS)--CVIS Consortium . DISCOVER INC. . System of Interactive Guidance and Information--Educational Testing Service . Educational and Career Exploration System (ECES)--Genessee Intermediate School District, Michigan
	CETA Prime Sponsor, Labor Market Information Survey	Statewide CETA Coordinator	A survey was to be conducted of prime sponsors to ascertain their information needs and use of existing data sources. The survey questions were designed to identify the reasons existing data sources did or did not meet CETA information needs.
	Workshop materials		Workshop materials are available for many of the components of the California Occupational Information System (COIS). These materials include a detailed lecture outline, drawings to illustrate technical concepts, and materials designed to permit the workshop participant to become familiar with the use of the COIS products.
District of Columbia	Newsletter-Career Guidance and Counseling	Public School System	This Newsletter is published semiannually by the District of Columbia Public School System. The Newsletter is written by the Advisory Council for Career Guidance and Counseling. The mission of the Advisory Council is to provide a learning environment that enables individuals to acquire the knowledge and skills necessary to obtain employment or to pursue educational opportunities.
Indiana	A Guide For Utilizing Occupational Information Publications	Employment Security Division	This report suggests ways various publications can be used by vocational planners, manpower developers and trainers, and employment and placement counselors A series of exercises included in the guide provides experience with the use of publications.

EXHIBIT 6-3(3)

State	Title Of Project	Source/Contact	Abstract/Description
New Hampshire	A Manual For The Career Planner	Department of Education	The Manual is designed to assist persons who desire to use the Career Planner as part of their guidance and counseling programs. The major objective of the Career Planner is to lead students through a series of activities that form the basis of a realistic evaluation of themselves in relation to personal career goals.
	Career Assessment For Secondary School Counselors	Thomas Crowley, Keene State College Richard Gustafson, Keene State College Lynda Moore, Antioch, New England	This document compares and contrasts the most commonly used career assessment instruments available today. The instruments are grouped as follows: (1) interest inventories, (2) aptitude batteries, and (3) other standardized tests relating to career development.
	Career Exploration and Skills Development--The Community Training Site Method	Project Bridges, Somersworth, N.H. School System	Project Bridges is aimed at the expansion of career education and vocational preparation for the students of Somersworth. In the community training site method, students are placed in real-life work situations. This manual is designed to assist others in planning, developing, and implementing a similar community training site program.
	Educator's Handbook for Secondary Career Guidance Programs	Richard A. Gustafson, Keene State College Josephine B. Hayslip, N.H. State Dept. of Education Philip Kimball, Keene State College Lynda Moore, Antioch New England For the N.H. Research Coordinating Unit	This Handbook is intended to aid the educator-counselor in formulating a workable career guidance program to be implemented at the local school district level. The chapter headings of the Handbook are: Needs Assessment, Program Organization and Management, Program Activities for Teachers and Counselors, Career Information Resource Centers, Community Resource Counseling, Placement, Follow-up, Evaluation of Career Guidance Programs, and New Development.
	Educator's Handbook for Secondary Career Guidance Programs	Richard A. Gustafson, Director of Career Studies, Keene State College, Keene, N.H. Melvin Severance, Director of Vocational Education at Milford, N.H.	This handbook is designed for use by LEAs in the conduct of a needs assessment, as part of the planning process. The handbook is subdivided into the following modules: . Needs assessment overview . Design of the study

EXHIBIT 6-3(4)

State	Title Of Project	Source/Contact	Abstract/Description
New Hampshire (continued)			. Job market analysis . Existing program analysis . Population analysis . Resource Analysis . Program plan development . Alternatives for assessing needs . Using data effectively . New developments . References This handbook is presented in a three-ring binder to facilitate modification and easy use.
New York	An Application of the Labor Department's Job Restructuring Methodology to Physical Therapy Activities	Department of Labor	This report is based on the job-restructuring studies conducted at two rehabilitation hospitals. The analysts studied physical therapy jobs and each of their component tasks in detail, recorded and rated task data in accordance with established job analysis concepts and procedures, and applied the job-restructuring methodology of the U.S. Department of Labor, Manpower Administration to regroup tasks in ways consistent with the objectives of the physical therapy departments of the hospitals.
	Applicant Appraisal Data Index	Department of Labor	The purpose of this Index is to assist interviewers and counselors in relating applicant appraisal data (interests, temperaments, aptitudes, etc.) to groups of jobs in the Worker Traits Arrangement, Vol. II, of the Dictionary of Occupational Titles, Third Edition. The Index is designed to be used in conjunction with a system of organized fact-finding by providing a possible starting point for identifying suitable worker traits groups. The index consists of an alphabetically arranged inventory of worker requirements, other traits considered to be significant, and life experience clues that are presented in narrative form in the Worker Traits Arrangement of Volume II of the DOT.

EXHIBIT 6-3(5)

State	Title Of Project	Source/Contact	Abstract/Description
New York (continued)	Career Exploration Questionnaire	Department of Labor	The Questionnaire contains a number of brief statements that describe activities or situations. An individual's responses to these statements provide evidence of his/her interests and temperament.
	Introduction and Instructions for Use of Desk Aids	Department of Labor	Desk Aids were developed to assist counselors and interviewers to explore potential careers with applicants who do not have a clear idea of their job interests and preferences. The Desk Aids concept was designed especially to make worker trait building blocks of the DOT, Third Edition more relevant to the needs of persons identified as HRD applicants. Desk Aid 1 consists of several hundred life experience situations, activities, and interests. Each is assigned DOT ratings for worker function levels of complexity, general educational development levels, interests, and temperaments in accordance with the terms and definitions appearing in DOT, Volume II, Appendix B. The purpose of the Desk Aid is to provide benchmarks for identifying traits and abilities based on evaluation of clues derived from leisure-time activities and hobbies, home and family chores, clubs, community and church work, casual work experience, and cultural and school interests and pursuits.
North Carolina	A Guide For Designing And Implementing A Middle Grades Occupational Exploration Program	Department of Public Instruction	This publication has been developed to serve as a guide in designing, implementing, and conducting an occupational exploration program: one step in the educational process leading toward the pursuit of a career pattern.
Oklahoma	Services Outcome Measurement Project	Department of Institutions, Social and Rehabilitation Services	The Project is designed to develop a measure of case difficulty and client change in the physical, psychological, economic, and vocational areas. The Rehabilitation Service Outcome Measurement Form is composed of demographic data and 23 five-point rating scales. The employment orientation of Vocational Rehabilitation suggested the general framework for development of the scales.

EXHIBIT 6-3(6)

State	Title Of Project	Source/Contact	Abstract/Description
Oklahoma	Vital Information for Employment and Work (VIEW)	State Department of Vocational - Technical Education	The VIEW microfiche has approximately four (4) pages on each of 523 occupations with a needlesort for a structure search. The needlesort utilizes what the student of client knows about himself/herself related to the various occupations. The VIEW microfiche and needlesort are in 640 schools, institutions and agencies in Oklahoma.
Oregon	Procedures and Manual Management Information System	Balance of Oregon Prime Sponsor	The manual provides an outline of general, suggested procedures for processing CETA applicants' records.
	Systems Exploration And Research for Career Help (SEARCH)	Employment Division, Department of Human Resources	SEARCH is a systems approach in which each client identifies several occupations of particular interest. Occupations are identified by comparing the client's interests, abilities, and temperaments with those same qualifications found in workers in each occupation. A counselor orientates a client to SEARCH. The client then completes either a Worker Trait Group Inventory (WTGI) or an Interest Checklist (ICL). Also, the client completes the General Aptitude Test Battery (GATB). These data sources are keyed into a computer to generate a client profile. The SEARCH process continues through interactive steps of gathering and matching detailed information to assist the client.
	SEARCH Worker Trait Group (WTG) Career Guides	Employment Division Department of Human Resources	The WTG Career Guides are part of the materials developed for use in SEARCH. This abridged edition of the Worker Traits Group Career Guides consists of only the first pages of each career guide in the much larger Worker Group Career Guides publication. Use of the WTG Career Guide represents Step 2 in the SEARCH process.
South Carolina	ESARS Tables Interpreted: A Users Guide	Employment Security Commission	This description of ESARS tables was written for Employment Service personnel who are familiar with definitions of various types of transactions and applicant characteristics on ESARS printouts.

EXHIBIT 6-3(7)

State	Title Of Project	Source/Contact	Abstract/Description
South Carolina (continued)	ESARS Term Index	Employment Security	This Index is a guide to locating data generated by the Employment Security Automated Reporting System. It is designed to help users locate the tables on which specific data elements appear.
Texas	Employer--TRC Liaison Program	Texas Rehabilitation Commission (TRC)	The Employer-TRC Liaison Program is concerned with the process of initiating, fostering, and maintaining cooperative working relationships with employers. An important part of the program is training employers' management personnel in the utilization of handicapped persons.

APPENDIX A. PROJECT METHODOLOGY

The original purpose of this project was to conduct a survey of the current status of Occupational Information System (OIS) development, by State. The concept of an Occupational Information System was (and still is) in the formative stages. In view of this the focus of the survey was redefined to concentrate on the development and utilization of occupational information within the States. Redefined, the objective was to identify how States are developing, disseminating, and using occupational information and to document the findings in a report designed to summarize and inform rather than to evaluate State efforts.

Initially, the survey instrument was a mail questionnaire. As it was undergoing development it became obvious that a questionnaire was an inappropriate mechanism for achieving NOICC's purposes. These purposes included:

- Identification of unique, exemplary, and/or innovative methodologies, practices, systems, publications, and approaches to the development and utilization of occupational information
- Identification of methodologies or systems that could potentially be transferred to other States
- Identification of common problems States have with regard to either developing or utilizing occupational information
- Identification of areas that should be pursued by NOICC in further study
- Facilitation of interstate sharing of methodologies, approaches, and other information
- Assistance to SOICC Directors in becoming familiar with occupational information development and utilization efforts within his/her State

In consideration of these purposes, the survey mechanism was changed to a personal interview visit. In addition to assuring collection of the varied data needed to serve NOICC purposes, the interview visit approach expanded the of the project.

The remainder of the appendix summarizes the questionnaire, explains more fully the reasons for converting to a personal interview approach, and documents the interview process used for the project.

1. QUESTIONNAIRE

The questionnaire developed initially was a comprehensive document encompassing all aspects of occupational information and use. Background sources used in developing the questionnaire included:

- BLS Concept Paper Of An OIS: A Working Draft
- Cross-code Index, developed in California
- California Manpower Management Information System (CMMIS)--Project Description
- Meetings with personnel from NOICC statutory member agencies
- Meetings with NOICC staff members

The structure of the questionnaire paralleled the components of an OIS, as conceived at that time. An outline of the questionnaire follows this page. Copies of the questionnaire will be provided to interested States upon request.[1] With minor modifications, the current questionnaire is well suited for use in conducting OIS feasibility studies and needs assessments at the State and sub-State levels.

When the questionnaire was ready for pilot testing, some important logistical questions were posed:

- How would the questionnaire be completed in a State?
- Would SOICC members provide the required information or would the questionnaire be circulated to the individual signatory agencies of the SOICC?
- Would responses be adversely affected if no SOICC Director had been appointed?
- What quality of information would we receive?

The answer to this last question ultimately resulted in shelving the questionnaire approach. Inherently, questionnaires provide neatly quantifiable data. NOICC required different types of data, often non-quantitative, to determine State techniques for developing and using occupational information. Therefore, an alternative approach for conducting the study became a necessity.

2. TRANSITION FROM A QUESTIONNAIRE TO PERSONAL INTERVIEW APPROACH

The approach selected for the conduct of the study was a personal interview

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[1] Send requests to: OIS Survey Questionnaire, Program Resources, Inc., 12000 Old Georgetown Road, Suite N1009, Rockville, MD 20852, Attention: David Lipstein

OUTLINE OF
OIS SURVEY QUESTIONNAIRE

I. SOICC And OIS Background

- SOICC Director
- Status of OIS Development
- Computer Hardware Availability
- State Organizations Participating in SOICC

II. OIS Information Development

- Demand Information
- Supply Information
- Supply/Demand Analysis
- Wage/Earnings Information
- Occupational Characteristics

III. OIS Information Use

- System Outputs and Information Requests
- System Users

IV. OIS Technical Comprehensiveness

- Data Storage
- Documentation and Training
- Assessment of OIS Operations

visit to each state and the District of Columbia. This approach provided several distinct advantages over a questionnaire.

- NOICC could "get into the field" to investigate first-hand what was happening with occupational information.
- Field exposure would enhance NOICC capabilities to establish reasonable and realistic policies and standards regarding OIS development.
- NOICC would gain visibility with SOICCs

The major drawback to the personal interview approach was the lack of sufficient people to conduct and complete the interviews within a reasonable time. An appeal was made to the signatory agencies of NOICC for personnel to conduct the interviews. The agencies responded to this request and the personal interview protocol was developed. Ultimately, each agency was responsible for fewer than 10 interview visits.

3. INTERVIEW METHODOLOGY

The conversion from mailed questionnaires to personal interviews involved several new requirements, namely:

- Developing an interview guide
- Pilot testing the interview guide and method
- Training the interviewers
- Structuring, announcing, scheduling, and conducting the interviews

Each of these requirements represents a significant aspect of the study as it was actually conducted.

(1) Developing An Interview Guide

An interview protocol was necessary because the interviews were going to be conducted by people representating a wide range of backgrounds and experience. The interview guide contained two basic parts: (1) Section One consisted of general discussion questions to be used as part of the introductory session with members of the SOICC, and (2) Section Two contained detailed questions encompassing the main aspects of an Occupational Information System (OIS). The six specific areas covered included:

- Employment data (demand data)
- Enrollment data/Unemployment data (supply data)
- Projected employment vs. projected enrollments (demand/supply analysis)

- Occupational characteristics data
- Occupational information delivery systems
- Technical resources

Five identical copies of Section Two were in each interview guide. These were for use in each of the four signatory agencies comprising the SOICC and in one additional state agency or organization considered to be relevant.

Brief introductory instructions accompanied Sections One and Two. Two types of logs were incorporated throughout the interview guide--to record the attendees of each meeting and to record each document requested. Interviewers were instructed to request information available about methodologies, studies, reports, publications, or systems that were considered to be unique, innovative, or exemplary with regard to either the development or utilization of occupational information. Realizing that "unique, innovative, or exemplary" would be subject to interpretation of the interviewer and the interviewee, we anticipated receiving too many, rather than too few, documents.

The interview guide was assembled in a three-ring notebook with appropriate dividers between sections and subsections. Throughout the guide, notes to interviewers informed them of existing Federal programs and certain standard terminology. Instructions were given for uniform compilation of the collected information.

(2) Pilot Testing The Interview Guide and Method

Because of its proximity to Washington, D.C., Maryland was chosen as the test State for the Interview protocol. At the time, Maryland did not have a SOICC Director on board.

Mr. Walt Webb of the NOICC staff conducted the pilot test interviews. Members of the Program Resources, Inc., staff observed the interview sessions. Observing the interview process provided necessary input for the development of the final version of the guide.

(3) Training The Interviewers

Interviewers were required to participate in two training sessions prior to conducting State visits. A comprehensive training package was prepared to explain:

- The purpose of the interview
- The interview process
- Conduct of the interview
- Structure and workability of the guide
- Expectations of the interviewers

The first training session involved an in-depth group review of the training package. The second session addressed to specific questions about the interview guide, logistics, and related Federal programs.

(4) Structuring, Announcing, Scheduling, And Conducting The Interviews

The interview sessions were structured to maximize the time allotted per visit. The two day visits were initiated by an introductory session with the SOICC organization in the State. Following this session, a minimum of four detailed interviews were conducted, one with each of the signatory agencies of the SOICC. If time permitted, the interviewer was asked to visit an additional agency or organization active in the development or utilization or occupational information. Generally, this fifth participating organization was either a State planning board or a career information system organization.

Announcements of the interview visits were made to the States via a NOICC Administrative Memorandum (78-4) to the SOICC Director or contact. Following this memorandum, members of the NOICC staff called the State contact to establish the actual dates of the visit. As dates were established they were communicated to the appropriate interviewer. The interviewer was responsible for handling the logistical arrangements pertaining to time and place of meetings.

Forty-nine of the fifty-one visits were completed between the beginning of April and June 9, 1978. The remaining two visits were completed in July. All interviewer summaries and most of the documents requested were available at NOICC by the end of July.

(5) Compiling The Information

Upon completion of the interviews, all materials and information were collected and the sorting process took place. Based on input from the interviews, NOICC, its Federal signatory agencies, and a private contractor, materials were compiled and assigned into appropriate categories according to five principal categories--demand, supply, supply/demand, characteristics and delivery.

The draft product underwent two review cycles prior to printing of this final document. The first cycle included a review by both the States and Federal signatory agencies; the second cycle of review was performed by NOICC.

APPENDIX B. SOICC DIRECTORY

Alabama

Ms. Mary Louise Simms, SOICC Director
State Department of Education
Division of Research, Planning & Dissemination
Room 521, State Office Building
Montgomery, AL 36130
205-832-3819

Alaska

Mr. Welles Gabier, SOICC Director
State Department of Education
Pouch F - State Office Building
Juneau, AK 99811
907-465-2980 FTS-8-399-0150

Arizona

Ms. Christine Walters, SOICC Director
Department of Education
Career & Vocational Education
1535 West Jefferson Avenue
Phoenix, AZ 85007
602-271-5223/3680

Arkansas

Mr. Coy Cozart, SOICC Director
Arkansas Employment Security Division
Post Office Box 2981
Little Rock, AR 72203
501-371-3551

California

Mr. John Van Zant, SOICC Director
535 East Main Street
Ventura, CA 93009
805-487-7711 Ext 4421 or 916-445-2461

Colorado

Mr. Warren Wolff, SOICC Director
Office of Occupational Information
Manpower Planning and Development
770 Grant Street, Room 222
Denver, CO 80203
303-839-3165

Connecticut

Mr. Gary King, SOICC Director
Office of Policy and Management
Employment and Training Division
Hartranft Hall
55 Elizabeth Street
Hartford, CT 06105
203-566-5146 or 8750

Delaware

Mr. Chris Lyons, SOICC Director
U.S. Department of Labor
820 North French Street
6th Floor
Wilmington, DE 19801
302-571-2684

District of Columbia

Mr. Wendell Russell, SOICC Director
State Occupational Information Coordinating Committee
605 G Street, N.W. (mezzanine floor)
Washington, D.C. 20001
202-629-2512

Florida

Ms. Eleanor Morgenthau, SOICC Director
Florida OICC, 325 John Knox Road
Suite L-500
Tallahassee, FL 32303
904-386-6111

Georgia

Mr. Clifford L. Granger, Executive Director
State Occupational Information Coordinating Committee
151 Ellis Street, N.E.
Suite 504
Atlanta, GA 30303
404-656-3117

Guam

Mr. Jose S. Montanona
Acting Executive Director
Guam Occupational Information
Coordinating Committee
P.O. Box 2817
Agana, Guam 96910

Hawaii

Mr. Patrick A. Stanley, SOICC Director
State Occupational Information
Coordinating Committee
1164 Bishop Street
Suite 502
Honolulu, HI 96813
808-548-3496

Idaho

Mr. Charles Mullerup, SOICC Director
State Division of Vocational Education
Len B. Jordan Building
650 W. State Street
Boise, ID 83720
208-384-3705

Illinois

Mr. Jan Staggs, SOICC Director
Illinois Occupational Information
Coordinating Committee
623 E. Adams Street
P.O. Box 1587
Springfield, IL 62705
217-785-3181

Indiana

Mr. Richard B. Tully, Contact
Indiana Office of Manpower Development
State Board of Vocational and Technical
Education
17 W. Market Street
401 Illinois Building
Indianapolis, IN 46204
317-633-7673

Iowa

Mr. John Niemeyer, SOICC Director
Office for Planning and Programming
523 East 12th Street
Des Moines, IA 50319
515-281-8076

Kansas

Mr. Randy Williams, SOICC Director
Kansas Department of Human Resources
634 S. Harrison, Suite C
Topeka, KS 66603
913-296-5285

Kentucky

Mr. Don Sullivan, SOICC Director
Kentucky Occupational Information
Coordinating Committee
101 Bridge Street
Frankfort, KY 40601
502-564-7976

Louisiana

Mr. Joseph R. Gerace
Secretary of Labor
P.O. Box 44094
Baton Rouge, LA 70802
504-342-3011
or
Mr. Wallace Guerin, Director SMSC
P.O. Box 44094
Baton Rouge, LA 70802
504-925-4377

Maine

Mr. Gerard Bilodeau, Executive Director
State Occupational Information
Coordinating Committee
State House
Augusta, ME 04330
207-289-2331

Maryland

Mr. Alison Witow, SOICC Director
Department of Human Resources
Research and Analysis Division
1100 N. Eutaw
Baltimore, MD 21201
301-383-5000

Massachusetts

Mr. Stuart I. Tischler, SOICC Director
Park Square Building
Suite 341
31 St. James Avenue
Boston, MA 02116
617-727-9740

Michigan

Mr. Harvey Ollis, SOICC Director
Occupational Information System
Department of Education
P.O. Box 30009
Lnasing, MI 48909
517-373-0815

Minnesota

Mr. John Cosgrove, SOICC Director
Department of Economic Security
690 American Center Building
150 East Kellogg Boulevard
St. Paul, MN 55101
612-296-2072

Mississippi

Mr. William Caston, SOICC Director
Vocational Technical Education
P.O. Box 771
Jackson, MS 39205
601-354-6779

Missouri

Ms. Kay Raithel, SOICC Director
Missouri Occupational Information
 Coordinating Committee
830 East High Street
Jefferson City, MO 65101
314-751-2624

Montana

Ms. Susan Bartlett, SOICC Director
Research and Analysis
Department of Labor and Industry
P.O. Box 1728
Helena, MT 59601
406-449-2741

Nebraska

Dr. Paige Birdsall, SOICC Director
W. 300 Nebraska Hall
University of Nebraska
Lincoln, NE 68588
402-472-3337

Nevada

Ms. Doris P. Palazzolo, SOICC Director
Capitol Complex
505 East King Street
Kinkead Building
Room 603
Carson City, NV 89710
702-885-4577

New Hampshire

Mr. Ralph W. Beckley, SOICC Director
Department of Employment Security
32 South Main Street
Concord, NH 03301
603-224-3311

New Jersey

Ms. Sandra Streeter, Acting Staff Director
New Jersey Occupational Information
 Coordinating Committee
Post Office Box 2765
Trenton, NJ 08625
609-292-2749

New Mexico

Dr. Charles Epler, SOICC Director
Governor's Office of Employment/
 Training Administration (GOETA)
3157 Cerrillos Road, Suite D
P.O. Box 4218
Santa Fe, NM 87502
505-827-3111

New York

Mr. Albert Ross, SOICC Director
Labor Department Building # 12
State Campus
Albany, NY 12240
518-457-5463

North Carolina

Ms. Joyce Kinnison, SOICC Director
North Carolina Department of Administration
116 W. Hones Street
Raleigh, NC 27603
919-733-6700

North Dakota

Mr. Peter Herda, SOICC Director
Route 5
Bismark, ND 58501
701-224-2733

Ohio

Mr. Jeffrey Windom, SOICC Director
State Department Building
S65 South Front Street
Room 904
Columbus, OH 43215
614-466-2095

Oklahoma

Mr. J.B. Morton, SOICC Director
State Department of Vocational
And Technical Education Services
1515 West 6th Avenue
Stillwater, OK 74074
405-377-2000

Oregon

Mr. Dave Fretwell, Executive Secretary
State Occupational Information
Coordinating Committee
Employment Division
875 Union Street, N.E.
Salem, OR 97311
503-378-8146

Pennsylvania

Mr. Fred Schneider, SOICC Coordinator
Labor and Industry Building
7th and Foster Street
Room 1008
Harrisburg, PA 17121
717-787-3467

Puerto Rico

Carmen Doris Diaz', SOICC Director
Bureau of Employment Security
Department of Labor and Human Resources
414 Barbosa Avenue
Hato Rey, Puerto Rico 00917
809-765-3570

Rhode Island

Ms. Mildred T. Nichols, SOICC Executive Director
Department of Education
Roger Williams Building
22 Hayes Street
Providence, RI 02908
401-272-0900

South Carolina

Ms. Carol Kososki, SOICC Director
1550 Gadsden Street
Columbia, SC 29202
803-758-3165

South Dakota

Mr. Vern Bak, SOICC Director
108 East Missouri
Pierre, SD 57501
605-773-3935

Tennessee

Mr. Kermit Bowling, SOICC Director
Tennessee Occupational Information Coordinating
Committee
Department of Employment Security
512 Cordell Hall Building
Nashville, TN 37219
615-741-6451

Texas

Mr. Edmond F. Ney, SOICC Executive Director
Texas Employment Commission Building
15th and Congress, Room 648
Austin, TX 78778
512-397-4970-1

Utah

Mr. Gary LaComb, SOICC Director
State Board of Education
250 E. 5th Street South
Salt Lake City, UT 84111
801-533-4354

Vermont

Mr. Rian Fried, SOICC Coordinator
Department of Employment and Security
P.O. Box 488
Montpelier, VT 05602
802-229-0311

Virginia

Mr. Melvin H. Garner, Administrative
Director
Vocational and Adult Education
Department of Education
P.O. Box 6Q
Richmond, VA 23216
804-786-2657

Virgin Islands

Mr. Richard Upson, Commissioner of
Labor
U.S. Department of Labor
P.O. Box 709
Cristiansted, St. Croix
U.S. Virgin Islands
809-774-0001

Mr. Aubrey Roebuck, Contact
Department of Education
P.O. Box 630
St. Thomas, Virgin Islands 00801

Mr. Hugh M. Smith, Contact
(or) Ms. Henriqueta Steele
U.S. Department of Labor
Employment Security Agency
P.O. Box 1092
Charlette Amalie
St. Thomas, Virgin Islands 00801
809-774-1440

Ms. Leonarda Crowley, Director
Department of Social Welfare
Division of Vocational Rehabilitation
P.OL Box 539
St. Thomas, Virgin Islands 00801

Washington

Mr. A.T. Woodhouse, SOICC Director
Commission for Vocational Education
Building 17, Airdustrial Park
Mail Stop LS - 10
Olympia, WA 98504
206-754-1552

West Virginia

Mr. Rex Clay, SOICC Director
State Department of Education
Building # 6, Room 221
1900 Washington Street East
Charleston, WV 25305
304-348-0061

Wisconsin

Mr. Shelley Cary, SOICC Director
1025 W. Johnson
University of Wisconsin
Educational Sciences Building, Room 952
Madison, WI 53702
608-263-1048

Wyoming

Mr. Marty Singkofer, SOICC Director
Barrett Building
Fourth Floor
Cheyenne, WY 82002
307-777-7261

Northern Mariana Islands

Mr. Alvaro A. Santos, Executive Director
of Vocational Education
Trust Territory of Pacific Island
Saipan, Mariana Island 96950

Trust Territory

Mr. Michael Dean Rody, Chairman
Trust Territory of the Pacific Islands
Occupational Information Coordinating
Committee
Office of Planning and Statistics
Saipan, Mariana Island 96950